MICROBES AND HEALTH

WILSON

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MICROBES

AND

HEALTH

BY

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PREFACE.

In the following pages the author has endeavored to give a rational cause for disease, especially those diseases that are contagious, or those said to be caused by germs.

He has endeavored to explain,

First, what a germ is, and its relation to man.

Second, the various germ theories are presented. These theories are released from all superfluous verbiage; stripped of their delusive coverings, and left to stand or fall according to their merits.

Third, and last, there is presented the true medium by which disease is conveyed from one to another, a medium wholly independent of the germ.

The author is a firm believer in germs, for germs are the means of carrying on the world's economy, the medium through which all material progress has been made; but it would be unreasonable to say that this medium is destructive to man. Yet, by a system of theorizing, the bacteriologists have actually succeeded in establishing in the minds of some a belief that germs are the cause of disease.

The author believes that all such theories have emanated from a hypothesis, an assumed basis which fails to present even a comprehensive guess or a logical supposition.

It is easy to frighten people over a case of diphtheria

or smallpox, and with health boards sounding the notes of alarm, many become excited, and are willing to believe any foolish thing.

When disease enters a community, if people would pay less attention to the hypothetical germ theorist, and the promulgators of fads, deal less with the imaginative and speculative, and depend more upon the real and the natural, disease would be less serious, for excitement only lowers the powers of resistance and renders disease more fatal.

From the teachings of bacteriology certain conclusions have been drawn regarding disease and its cause, and the purpose of this volume is to meet those conclusions with what the writer believes to be the true explanation, and one wholly independent of the germ. Therefore, whatever is said in the following pages is aimed at the principle and not at the bacteriologists.

While the author has endeavored to give a full and clear description of the various subjects mentioned,—consumption, typhoid fever, disease, the various germ theories, etc., he has also aimed to eliminate all superfluous verbiage, and present each subject in the fewest words consistent with a correct understanding of each.

This gives the greatest amount of knowledge with a minimum amount of reading.

Each chapter is written in a plain conversational manner, which can be readily understood by all.

MICROBES AND HEALTH.

INTRODUCTORY.

"The crowning virtue of manhood is man, and as the coming centuries roll over their ashes, their names will be held in as profound respect as if angel purity had given the impress of divinity to their every action.

"As time advances their deeds will become richer and holier until they command the respect and reverence of every beholder."

A nation may be lost in the whirlpool of revolution and strife, yet the names of great men will remain as enduring as time.

The men who have led the world in peace and war, who have snatched victory from land and sea, who have made the world beautiful and grand, who have labored for the advancement of the human race, labored to place man upon a higher plane intellectually, labored to relieve suffering and prolong human life, have been prompted by the demands of imperious duty based upon the divine principles of equality. As time advances the progress and successful termination of the principles for which they struggled combine to throw around them a halo that fills the reader with admiration.

They are men who have struggled for the support

of those principles upon which governments are founded, labored for such government of a state or nation as will result in the greatest prosperity, peace and safety for its people, and bring about the best possible results of civil society. They are men who aid in the production, accumulation and distribution of wealth, both financial and intellectual; aid and support great industrial revolutions, and aid in modifying man's selfish desires. They realize that industrial freedom is one of the most sacred rights of man; realize the obligations of those in power, and strive for the protection of the people, and for their preservation and defense against foreign control.

"Do unto others as you would have others do unto you was the watchword in heaven before this mighty world was spoken into existence, and its melodies will be chanted through the rolling ages of eternity." These magic words are still the guiding star to all who are striving to dispel the mists of superstition and place benevolence and right before commercial interests.

"Justice is one of the noblest attributes of man. It soars above self and is prompted by honest motives. It aims at glorious ends. It is not confined to any nation, country or caste. No sectarianism can swerve it, no monarch suppress it, and no obstacle paralyze it."

Contrast such principles with the gigantic system that has been built up during the last few years, founded upon the present day germ theories, and supported by what is called serum therapy, animal extracts and antitoxins. These are simply the filthy

blood serums taken from the lower animals and injected into the human system. By this means the bacteriologists claim to be able to cure disease; especially those diseases that are "ketching." Yet it is well known that they cannot cure smallpox, measles, whooping-cough, scarlet fever, or any other disease. In fact, while health boards and other bacteriologists manufacture and use antitoxins for many diseases, they have proved such utter failures that of late we hear little of them, except antitoxin for diphtheria. The others have faded from view until even the most sanguine bacteriologist is ashamed to speak of them. Antitoxin for diphtheria will meet the same fate. The same is true of animal extracts. In fact, the whole germ theory with its auxiliaries, although encased in an armor of self-pride and arbitrary leadership, will die a natural death.

The claims of the bacteriologist are pure assumption. They claim consumption is contagious, yet the writer knows of no evidence they have ever produced in support of such a claim. In fact, the very nature of the disease renders such evidence impossible. Health boards are not only trying to force the consumptive into exile, but to force their theoretical literature upon the public even to greater extent than they have heretofore been able to do.

They claim to lead the medical profession, to decide what diseases are contagious and those that are not. Officialism asserts and you must believe. Unsuspecting and susceptible legislators are prevailed upon to grant additional appropriations and pass new laws, increasing

the power of the bacteriologist over the individual physician and the general public. The legislators receive every encouragement from the attending bacteriologists who aid and abet the passage of the various bills.

We believe the lobbying necessary to convert this mass of bacteriological maze into law is demoralizing and degrading to human nature; that it antagonizes natural progress, tramples upon justice and ultimately would destroy all that is worthiest for which the world has so long striven. It is doubtful if the crowned heads of Europe or the president of the United States possess such absolute authority. In spite of our boasted civilization and intellectual liberty, there has grown up among us a form of arbitrary power that would astonish any careful observer.

All legislation intended to prohibit or regulate any calling or industry is class legislation, and is repugnant to the spirit of constitutional liberty. Health boards and pure food commissions are maintained by class legislation, and any association or corporation that cannot live without class legislation is not worthy an existence.

To govern best is to govern least. It is said the founders of our republic taught that a government was simply an association of individuals designed to preserve order and administer justice. But politicians are said to be parasites caring nothing for the body on which they feed except as foraging ground.

A man is useful only so long as his knowledge is based upon unconscious worth and ability. Every manly speculator may diverge from the ideal or pos-

sible, but the moment a man feels a sense of superiority he casts a shadow across the plane of natural progress.

We realize that state boards of health and serum manufacturers would move heaven and earth to maintain their commercial interest and pose as leaders of the medical profession. But theory versus facts will never succeed. "Truth crushed to earth shall rise again." The germ theories are fading. Truth and realities are taking their place, and soon they will lie buried beneath the charitable mantle of natural progress. Even now it is estimated that less than half the medical profession believe the doctrine. Yet the efforts of those who support its claims have resulted in vast business enterprises which extend their interests throughout the civilized world. So skillfully has this been done that the public look upon each move with the greatest admiration, and wonder what science will discover next. What is the result of this marvelous and complicated system of research? Why, there is no evidence that the bacteriologists have ever prevented a single disease or saved one human life. On the contrary, with the discovery of each new(?) microbe, the scythe of death cuts a new swath in the ranks of living men and women. This fatal termination is the natural result of testing some new serum or animal extract, and is also influenced by the excitement and fear created by some startling claims made by the state boards of health or other bacteriologists. We believe the so called science is the outgrowth of gigantic commercial interests, which are supported by

those who are acting contrary to natural laws, laws which are repellant alike to science and humanity. It is publicly stated that some of our philanthropists are to build an immense institute for medical research.(?) We are told that the proposed institution is to be established on the theories of Koch, Pasteur, and other commercial scientists in Europe. Yet the chief event which made the name of Koch famous was the construction of a colossal edifice of pretense, to which clung the desperate hopes of countless consumptives—only to be crushed when it fell, or when Koch's tuberculin was pronounced a fraud by the civilized world.

Again, when we turn from this financial enterprise to that of Pasteur, of hydrophobia fame, we find that during the past fifty years there probably have not been so many cases of hydrophobia in the United States as have occurred in Paris in one year, and Paris is the home of the Pasteur Institute. This corresponds to the statement of James Howard Thornton, C. B. M. B., Fellow of Kings College, London, that the inoculation of the Pasteur antirabic serum often produces hydrophobia. The same as antitoxin for diphtheria often causes death. It is stated that at the April 9th, 1900, meeting of the medical association of the greater city of New York, antitoxin for diphtheria was almost universally condemned by those who spoke.

We remember the teaching that every animal lives upon another. That the strong devour the weak. That every mouth is a slaughter-house and every stomach a tomb, and that over this precipice runs a perfect Niagara of blood. We believe that trusts, boards of

health, pure food commissions and other monopolies possess this gormandizing power to a remarkable degree, and, while his efforts may be weak, the author will lend his influence to aid in checking the tremendous tide of commercialism that underlies the germ theories, the manufacture of animal extracts, serum therapy, and antitoxins.

The millions of public money now turned into the channels of so called medical science, and for which boards of health are largely responsible, should be converted into institutions where the grand yet simple truths of hygienic living could be open to all. Health must be obtained by temperance, purity, cleanliness, a contented mind and cheerful spirit, and by healthful atmosphere, rendered pure by the untiring operation of nature's laboratory; and not by inoculating the system with poison from diseased animals or dug from the brains and entrails of tortured brutes. "But self is the Sahara of the human heart, where all the noble powers of the soul are buried in its scorching sands." The mournful process of trying to extract your health from another's disease, or your comfort from another's misery, should be exchanged for that preventive medicine, that beautiful gift—an untainted system.

GERMS.

At first the germ theory was, oh, so easy, so delightfully simple. It was this: "Every contagious disease was due to a specific germ. No germ; no disease; eliminate the germ, cure the disease." This was a plain statement which all could understand. But now the bacteriologists themselves admit that there are innumerable cases of infectious disease where no germ can be found, and also innumerable cases where the germs are present, and no disease can be found, and as a result they have tried to get out of the difficulty by saying: "Bacteriologists have come to recognize that not the presence of the germ, but some virulent condition of the microbe causes the disease. In other words the diseased condition seems to be common to both germ and patient, and the problem which really confronts us is to find out what ails the germ." We believe the germ is all right, and respectfully inquire what ails the bacteriologists? Again, if the "disease is common to both germ and patient," let us ask, does the patient take the disease from the germ, or does the germ take the disease from the patient?

The tendency of the bacteriologist is to lead the medical profession, and to do this they think they must get up something new, or they will not be popular; the next thing is a large number of imaginary successes in

some very difficult cases, which, of course, could not have been performed without their new discovery, new antiseptics, new antitoxins, etc. Then they must have a load of testimonials from leading(?) men—men with far-fetched distinction; now they have made a mark or name for themselves, which distinguishes them as leaders. Next, they must have a following. Some will readily agree with them and will advocate any, and all proposed plans, but the great majority will fall in line simply because they are afraid to do otherwise; they are afraid the bacteriologists will accuse them of being behind the times.

Since our late unpleasantness with Spain we have heard much about bubonic plague. The writer has just read a pamphlet on bubonic plague written by Dr. Walter Wyman, a noted bacteriologist. The doctor claims the disease is caused by a germ, and he describes the plague germ as a "cocco-bacillus." Coccus means round like a ball, and bacillus means long like a rod. It is known that many times bacteriologists do not agree, and this wise division is understood to be for the purpose of giving both sides an equal chance. The advice furnished by Doctor Wyman and other bacteriologists is given in large quantities. Such generosity reminds us of the Irishman's will, which, condensed, reads something like this:

I bequathe to all mankoind the free air of hiven, all the fishes in the sea they can ketch, and all the birds in the air they can shute. I bequathe to thim all the sun, moon and stars. I lave to Timothy O'Flaherty one pint of potheen I can't finish. May God have mercy on O'Flaherty.

The bacteriologists are unable to give us the cause of disease, but they can tell us of the germ. The bacillustuberculosisofKoch, and later the staphylococcuspyogeneseaureus and last the cocco-bacillus. The importance of this combination bacillustuberculosisstaphylococcuspyogenesaureuscoccobacillus cannot be overestimated, nor can it be fully appreciated except by the disciples of Koch.

Dr. Wyman is Supervising Surgeon General, U. S. Marine Hospital Service, and after explaining(?) how the germ enters the body, the doctor says regarding the spread of disease, that rats are the most probable means of conveyance. Then Dr. Wyman himself asks the stupendous question: "How is the disease conveyed from rat to rat?"

The doctor proceeds to answer his own question.

Regarding this grave problem the doctor solemnly declares: "It is very possible that the fleas which infest rats, and which notoriously leave their bodies as soon as the cadavers become cold after death, may, by their bites infect other rats."

Fleas, beside the germs, the bacteriologists can inform us regarding fleas, that order of insects known as *Sephonoptera,* and especially the variety *Pulex iritans.*

Of course there are many other varieties. The *Pulex canis, Pulex felis domestica,* sand fleas, sand hoppers, jiggers, etc.

It is said these pellucid parasites are armed with an apparatus called the suctorial proboscis, or something like that. We admit that we possess but a limited

knowledge of the histological anatomy of the flea, nor is it necessary, for the bacteriologists, armed with their test tubes, culture media, incubators and microscopes, can tell us all about the proboscis suctorialous, aye more, it was their penetrating eye and revolving brain that first saw the elements of health in the secretions of that long-whiskered animal so frequently mentioned in the books of Moses, and who first breathed the words *Robert's Lymph.*

But to return to Doctor Wyman and his flea. The doctor says one has but to reflect upon the vast amount of research, thought and labor of which he is the exponent, and the misery, disaster and death which would otherwise follow, to appreciate the value of bacteriology.

Fearing the reader may not fully understand or appreciate the claims of bacteriology, let us quote Doctor Wyman again. He says fleas first distribute disease among rats, and the rats convey the disease to man.

Is it plain now?

Or is it still a mystery, how capable men like Doctor Wyman and other bacteriologists can spend their time among fleas, rats, guinea pigs, test tubes and other appliances utterly worthless in the diagnosis or treatment of disease?

In his rational treatment of disease, fifteenth edition, page 4-5, the well known Charles Marchand, chemist of New York City, says:

"It is, perhaps, to be deplored that all later investigations seem to have thrown some doubt on the value of positive testimony in bacteriology. Most physicians had come to accept the conclusions that if after making

a proper culture, the germs were found, that this fact alone was positive proof of the presence of the disease, but that on the other hand, so much reliance could not be placed upon negative evidence, for sometimes the disease existed when no germs could be found."

Sepsis and Asepsis.

While the author is not a believer in the germ causation of disease, he is a firm believer in Sepsis and Asepsis, because he realizes the dangers lurking in filth, and appreciates the benefits of cleanliness. He believes that absolute cleanliness is not only necessary in operative surgery, but also in the every-day lives of the people. This means pure water, fresh air and sunshine; it means pure food and a clean kitchen; it means bathing, the prevention of putrefactive changes, etc.

Isolation and Disinfection.

Again, while the author is not a believer in the germ causation of disease, he is emphatically in favor of isolating every infectious case. Strict quarantine regulations should be practised with every disease that is "ketching." Carbolic acid, a solution of lime in water, or other antiseptics should be freely used, while fresh air and sunshine should be admitted in abundance. It seems hardly necessary to add that mechanical cleanliness in the form of soap and water is entitled to every encouragement. This is as true in health as in sickness. In fact if as much care was given to health as has been lavished upon disease, the latter would vanish, and decay would be death's only victim.

Bacteriologists claim that germs are the cause of disease. The author denies that claim, and in support of his position wishes first, to consider:

What is a Germ?

All material substance is called matter. There are different kinds of matter, animal, mineral, vegetable, gaseous, etc. All living matter is composed of little particles called cells, built one upon another.

Although microscopic in size, cells are composed of different elements in the form of a gelatinous substance called protoplasm. Nothing is known regarding the chemistry of a cell, or how it is that the elementary particles are led to assume the form of a cell. Most cells are about eighty per cent water and twenty per cent solid matter. Embedded in the protoplasm of the cell is a small body called the nucleus. The nucleus is the center from which intelligence is directed.

A cell, any cell, may be compared to a seed. A cell grows, divides and multiplies in favorable surroundings, a seed does the same. "A cell is the smallest element of an organized body capable of independent motion." It is the primary element or unit that germinates into a thing or being. According to the present teaching, a germ is a vegetable cell, while an animal cell is not a germ, yet a living animal cell is really just as much a germ as a vegetable cell.

Any cell that is capable of reproduction may be called a germ; the term cannot be confined to those cells or germs which are found in the body during disease, and which take no part in the body structure.

Cells may be called germs because they have the power to germinate, grow, and develop new life. The term cell and germ may be used interchangeably.

It is understood, of course, that an animal or vegetable cell and those cells floating in air and water are not alike, yet each answers to the same definition, and each may be called a germ. They differ because the Divine architect has assigned to each a different power or part in the world's economy.

All living matter, animal or vegetable, originates in a single cell or germ, while vast numbers constitute the more developed structure, so arranged as to form the different organs or parts. The cells constituting the human body vary from one one-hundred-and-twenty-fifth to one five-thousandth of an inch in diameter. As just explained, cells or germs are concerned in all the processes of life. They influence the necessary change in matter before its absorption into living organisms, and they constitute the organism after it is formed. To-day a cell, any cell or germ, may aid in the formation of organic life, to-morrow it may be destroyed and its elements aid in the formation of a cell or germ which later may be found in disease.

There are all grades and conditions of these cells or germs, old and young, large and small, healthy and unhealthy. They are continually being born and continually dying. There is no dividing line between them.

All the varied scenes in nature are caused by these germ cells, which are constantly changing, constantly

undergoing transformation, from one thing or being to another. The result of such changes supports the living and reduces the dead. It liberates the elements after life is extinct, thus permitting them to again enter into active form. This is but a process of fermentation; it is a chemical change where something new is being produced. All changes that take place in organic matter are through the medium of these little germ cells; other changes are produced by chemicals, but with these we have little to do except for mechanical purposes.

The soil is the great medium of exchange through which minerals or chemicals find their way into organic structures, first supplying the various plant foods, and from them to the animal. The changes produced by chemicals, like those produced by the germ cells, are also a process of fermentation.

Fermentation.

To get a better understanding of fermentation, it may be stated that fermentation is the splitting up, or separating the parts or elements of a substance, any substance, and the formation of new ones. These changes are taking place constantly both in the animal and in the vegetable kingdoms, and even the granite rock falls and crumbles to dust. "Throughout all nature there is a ceaseless change. The water we drink and the food we eat have been used thousands of times before, and will again pass on in their endless round to develop other forms and new life. We are but parts of a great system, and the elements we use are not our

own, for in nature all is common. Those elements of which our bodies are formed a few months ago may have waved in the forest tree, or in the field as grain, may have frozen on Arctic snows, bleached on torrid plains, beautified the poet's brain, or become beef on the butcher's block, to strengthen the blacksmith's arm." All this is but a process of fermentation.

A plant selects and absorbs certain elements from the soil, reforms and fits them into a part of its own structure; dead or inert matter becomes living matter; that is fermentation, and is produced by the little germ cells which constitute the plant. By the action of certain germ cells, a dead body is decomposed; the complex organism is reduced to simpler forms or elements; that is fermentation, though putrefaction is the term usually applied to fermentation of dead matter, but this, too, is caused by these little germ cells.

Examining these changes more closely it may be stated that a seed, any seed, consists essentially of two substances, starch and gluten, in which is contained a little germ cell. Both the starch and gluten are insoluble in water, yet both are needed to support the germ cell in its process of development, and through the medium of the warm moist earth, nature has provided that a chemical change shall take place. The gluten is first converted into a substance called diastase, and the diastase has the power of converting the starch into glucose or grape sugar; and as the change continues the sugar breaks up into alcohol, carbonic acid gas and water, which aid in supplying nourishment until the little germ, through a process of division, can

reach down into the earth and form a root, after which it is able to care for itself. This change is but a process of fermentation. We see something new has been produced. The gluten is converted into diastase and the starch into alcohol, and a germ cell has developed into a plant or tree. Undoubtedly there are other germ cells in the soil which, acting as a ferment, aid in the process by producing certain changes in such elements of the soil as are needed to nourish the plant. These changes render the elements in a condition to be more readily taken up by the plant tissues.

In the Washington Times of January 27, 1901, that eminent authority, Dr. William Osler, M. D., F. R. S., professor of medicine in the Johns Hopkins University, Baltimore, says:

"Quite astonishing is the discovery that within the knobs of peas and beans live bacteria which by splitting up mineral salts containing nitrogen and by absorbing nitrogen from the air, give it over to the plant so that it is enabled to grow luxuriantly whereas, without their presence the tiller of the soil might fertilize the soil in vain. It is quite possible that not alone peas and beans, but all grasses, plants and trees depend upon the presence of such germs for their very existance, which in turn supply man and animals with their means of existance. Hence we see that these nitrifying bacteria, as they are called, if swept out of existance, would be the cause of cessation of all life upon the globe. And arguing backward, one prominent authority states it as his belief that the first of all life on this earth were those lowly forms of plants

(cells or germs) which only required the nitrogen of the air or the salts to enable them to multiply" (Darwin's theory).

Dr. Osler also says: "The study of the life of these diminutive plants (germs) excites the wonder of those who make observations upon them. It is truly marvelous to know that these bacteria can accomplish in their short lives of possibly a few hours or days, feats which would baffle the cleverest of chemists if given years of a lifetime to work upon.

"They give to the farmer the good quality of his crops, to the dairyman superior butter and cheese; they assist in a large measure in freeing our rivers and lakes of harmful pollution."

In bread baking the same changes take place as that described in the growth of the seed. Flour consists mostly of gluten and starch, with a little water and sugar. In making bread, yeast is generally added, and this takes the place of the diastase in the seed. Yeast converts the sugar into alcohol, carbonic acid gas and water. It also acts upon the starch and converts some of it into sugar, so that the per cent of sugar remains about the same. There is a loss of about five per cent of starch. When milk emptyings are used, there is first a mixture of milk and flour; this kept at blood heat rapidly develops yeast and the result is the same. In baking bread the alcohol and some of the water evaporate, and the carbonic acid gas in its efforts to escape lifts or raises the tenacious dough, and thus the bread becomes light. Bread that is well baked still contains forty-five per cent of water.

In bread baking in London, alone, in the year 1858, it was estimated that over three hundred thousand gallons of alcohol were evolved and lost.

Some restrict and confine fermentation to the decomposition of non-proteid substances; i. e., those not containing albumen. Starch and sugar are examples. These differ from grain and flour as they have no power within themselves to undergo change, but must be influenced by another substance, and this other substance is called a ferment. Yeast, already mentioned, is an example of ferment with which all are familiar. Yeast was employed as "leaven" as early as the year 1892 B. C. The absence of yeast or leaven constituted the peculiarity of the bread used at the passover, B. C. 1491. Yeast is composed of living organisms in the form of little cells or germs, about one three-thousandth of an inch in diameter. They are germs just as much as the so called germs found in disease. Both are vegetable organisms and under the proper conditions of heat and moisture manifest life and produce fermentation.

The tissue-change going on in the human body, repair and waste, is a process of fermentation, and is carried on through the influence of the little germ cells of which the body is formed. It is sometimes called oxidation, because the red blood-corpuscles or cells which float in the blood-stream in great numbers, in their passage through the lungs, absorb oxygen from the air we breathe, and through the circulation it is carried to all parts of the body, and absorbed by the cells, which constitute the different organs and tissues.

This aids in giving life, force and energy; aids in the tissue-change, and in the production of heat.

The souring of milk is another example of fermentation. Milk contains about four per cent of casein, or milk-albumin; this is held in solution by a trace of alkaline salt, and is quickly precipated by the addition of an acid. The germs which are floating through the air and which are everywhere present, inhabit the milk and produce the acid by converting the lactose, or milk-sugar into lactic acid. This precipitates the casein, or milk-albumin, in the form of curd. It is from this curd that cheese is made. It also contains the fat from which butter is made. If it is not all worked out of butter it furnishes nourishment for other cell-germs, and these, acting as a ferment, produce butyric and other acids, which make butter rancid.

In bread baking, yeast-cells acted as the ferment and converted the starch into alcohol and carbonic acid. In the souring of milk, other cells floating through the air acted as a ferment and converted the lactose or milk-sugar into lactic acid. So also when some cells or tissues in the human body die from lack of nourishment, as in disease, germ cells that are floating in the air and which inhabit the human system act as a ferment, and by their power to produce change they convert such dead tissue into gases, pus, etc., so that it may be discharged and the system relieved. This is a wise provision and a natural law, but the bacteriologists claim that these germs are the cause of nearly all suffering, disease and death. They forget that disease is caused by the accumulation of waste matter in

the system. This accumulation of waste results from indigestion and lack of elimination. The waste acts as a poison and disease follows.

There are no poisons known in the realm of bacteriology to compare with the natural waste of the human body. If a healthy man was compelled to breathe the poisonous carbonic acid given off from his own lungs, death would be almost instantaneous. Urea eliminated by the kidneys, if retained, would cause death in a few hours, yet the bacteriologist would have us believe that the only danger is to be found in their so called germs.

All these changes and these poisons are the results or effects of natural law. The carbonic acid given off by the lungs is taken up by the vegetable kingdom, and the oxygen given off by the vegetable kingdom is taken up by the lungs. In both cases the change is produced by little germ cells of which the structures are formed, and while these changes are taking place in living matter, other germs influence changes in dead matter, and the elements of dead tissue are given back to support the living. Germs were created for this purpose. This is self evident, otherwise they would not be everywhere present and would not have the power to produce fermentation, but nature foresaw and prepared to meet these changes, hence the power of the human system to destroy germs and eliminate poisons. As germs are the primary forms of all living matter, they may be compared to a seed, as already mentioned. If all germ life should be destroyed, all the higher forms of life would cease to exist, all animal and vegetable life would rapidly pass away, perish, and

soon there would not be a living thing to inhabit the earth.

The so called germs may be subjected to great extremes of heat and cold, and afterwards will grow vigorously in favorable surroundings. So also a seed is capable of resisting great extremes of dry heat and cold, and will afterwards grow vigorously in favorable surroundings, for nature had designed that both shall live. Moist heat, as boiling water, will destroy germs; it will also destroy a seed, but nature does not furnish boiling water or any other form of moist heat. Germs are not active and do not multiply when exposed to great extremes of heat and cold; a seed is not active and will not grow under these conditions.

Where did germs come from? They are the primary forms of all living matter, hence we may inquire where matter came from.

How do germs produce fermentation? They furnish an enzym or ferment which has the power of separating the elements of dead tissue; i. e., the power of producing fermentation, the same as the yeast cells in bread baking. The attraction which naturally exists between all forms of matter is strongest in the living, hence the power of living germs to absorb nourishment by attracting the elements of dead germs or dead matter. This is called "vital force," and it is by reason of such forces, attraction and repulsion, that such a torrent of ceaseless changes is made possible. These changes support the living by liberating the elements of the dead. It is by this plan, and through the medium of these little germs, that the Divine Intelli-

gence carries on the great system of the universe, and it is for this reason that germs are everywhere present. Earth, air and water are filled with them. So is the human body, and if through accident, injury or inflammation, the brain, heart, lungs or other organs become diseased, and through the effects of such disease there are some cells or tissues destroyed, germs are present to aid in liberating such tissue, and they do this by their power to produce fermentation. This separates the elements or component parts that they may be eliminated, so that each may add its mite in the production or formation of something new. Nowhere in the field of nature is there room for indolence or idleness.

These brief illustrations are given, not for the purpose of defining fermentation, but to remind the reader that all changes in life or after death are caused by these little germ cells. Some draw dividing lines, make separations, and teach a difference between oxidation, fermentation and putrefaction, yet there is no difference. It is one continual change, and every element in nature is ever active in doing its part, and all depend upon the lower forms of life, working to produce the higher. In a word, the whole process of evolution is carried on by these little germ cells. They are the medium through which all nature has been produced, and it would be unreasonable to believe that the Creative Power had so mistaken His plans as to have this medium destructive to man.

Many people believe in evolution; that is, that all

forms of life have been and are being derived by the gradual modification of earlier forms. This theory also tells us that all living matter is composed of little cells or germs. It also assumes that there is a God back of all, working out results along unalterable lines of natural law, and this is certainly true to some extent, for no one will deny that all structures, animal or vegetable, and that the bodies of every human being are formed of minute organisms called cells as briefly described, and that it is by a division and multiplication of such cells that every structure is built. In man, beginning as a single parent cell, it divides and reforms, ever tending from the lower to the higher, until the central nervous system is complete.

According to this teaching, any variety of organic matter so situated as to develop special organs will outlive other varieties, because "in union there is strength." This is Charles Darwin's "Natural Selection," and Herbert Spencer's "Survival of the Fittest."

Nature has designed that the cells constituting the human body should overcome all others because the human body is the highest type of organic structure, and to stop short of the highest would be a mistake, and nature does not make mistakes.

According to the bacteriologists but very few of these so called germs are poisonous. They admit that of the countless millions present on every hand only five or six varieties are dangerous, yet these half dozen innocent and defenseless germs are used as a basis from which volumes have been written. They are a nucleus

from whose center there has radiated leucomaines, ptomains, trouble, anxiety, visions, worry, fright, infection, contagion, sickness, disease and death.

Germs do not signify so much after all. Their presence or absence amounts to little, except to those who preside with tireless and sleepless watchfulness over the test tubes and incubators.

It has been stated that a germ is only a vegetable cell; that the term cell and germ may be used interchangeably, yet because the word germ has become so fixed in the public mind, the term will be used in the succeeding pages of this chapter.

While germs cannot affect healthy tissue, they can and do affect tissue that is destroyed by disease, because if such tissue were allowed to remain in the system it would act as an irritant like any other foreign body. Again, such tissue is of no further use in the system, and so according to the changes that take place everywhere, this one is made through the medium of germs. Their influence separates the elements of the dead tissue, some in the form of gases, while some liquefies in the form of pus. This is nature's plan to aid in elimination. If in the lungs, some may be expectorated; if in other parts, an abscess may form. The surgeon completes his operation, and sews up the wound. A few days later an abscess is discovered following one of the stitches. This is called a stitch abscess. Then the surgeon concludes that the sutures used were not sterile, or that some of his assistants did not have their hands thoroughly disinfected.

The abscess was not caused by germs, but the system of the patient was unhealthy. There was some irritating substance in the circulation, resulting from retained waste or imperfect digestion, and the irritation would naturally produce the greatest effect wherever there was least resistance. Resistance was least where the wound was made, because the tissues were weakened by the operation. The irritation was greater than the weakened cells could stand, and they were destroyed. The germs which are always present acting upon these dead cells, produced fermentation and the dead tissue was converted into pus, hence the abscess.

The disinfectants or antiseptics referred to could not have prevented the stitch abscess, and the level-headed surgeon understands that if antiseptics were used strong enough to destroy all the surrounding tissue, many germs would still remain vigorous, because they were designed to resist disinfectants, acids, alkalies, heat, cold, etc. Animal tissue was not, because it never comes in contact with them except by accident, but animal tissue was designed to resist germs because germs are present always, and it is well known that healthy tissue can destroy germs with the greatest ease. A few years ago, bacteriologists flushed the healthiest wounds with antiseptics. To-day, they have so modified their practice as to restrict all antiseptics in non-infected wounds. Bacteriologists tell us about aseptic operations; i. e., operations free from germs; operations in which germ action is entirely excluded, yet this is impossible, for the dressings may be boiled and baked, and the operator hooded and masked, yet

the atmosphere will defy him and germs enter the wound just the same. While it is true that cleanliness is necessary within the bounds of reason and common sense, it is also true that there is nothing more silly than scrubbing with chemicals, acids and alkalies, boiling bandages, instruments, appliances, etc. This practice is carried to such extremes in some cases that the operator becomes an object of pity.

The question may be asked, if germs do not cause disease why use antiseptics? Animal tissue contains oxygen, carbon, nitrogen, sulphur, phosphorus, hydrogen, etc., and after death the fermentation or change produced by germ action separates these elements and the oxygen unites with the carbon to form carbonic acid, while the hydrogen divides itself between the nitrogen, sulphur and phosphorus and forms ammonia with sulphurated and phosphurated hydrogen. These gases give offensive odor. These substances are irritating. Such irritating matter always results from decomposing animal tissue, and is injurious to the surrounding structures. A purulent or unhealthy wound contains these organic poisons, corrosive substances and poisonous gases, and it is these acrid substances that are dangerous. Antiseptics are valuable because they antagonize the action of this decomposing matter, and thus reinforce healthy tissue and bring about wholesome influences to the structures that are yet sound.

With the disappearance of the dead and dying tissue the germs disappear also, not because the antiseptics have destroyed them, but because their food supply or nourishment is gone and they cannot live in healthy

tissue. In most cases the natural resistance is sufficient to resist the morbid influences of putrefaction, but the reinforcement furnished by the antiseptics aids in bringing about favorable results at an earlier date.

Germs do not cause disease, and if they ever carry infection or poison from a diseased body, they act simply as a medium; i. e., having been in contact with diseased tissue they may carry disease the same as a dirty towel or dirty instrument.

As stated, germs in varying numbers and all varieties inhabit earth, air and water, except upon high mountains, above the line of perpetual snow, or on mid-ocean far away from land and ship. The air which surrounds high mountain peaks, or on mid-ocean, contains no life, hence nature does not concentrate her forces at these points. This is another evidence of the economy of nature.

But germs are found wherever life is found. The air we breathe is swarming with germs; so is the water we drink; so is the soil upon which we tread. They cover all objects exposed to air; they may be found everywhere upon the surface of the human body; they inhabit all mucous membrane that is exposed to air. The mouth, stomach, digestive tract and the air-tubes of the lungs, all contain germs. It cannot be otherwise for they are taken in with every breath, but nature has provided for this by rendering the fluids of the body capable of destroying germ life.

Can germs overcome animal tissue and produce disease? The thought needs no argument. If germs could overcome animal tissue the human race would

soon be swept from the face of the earth. Germs that have been subjected to a temperature of two hundred and forty-eight degrees F. below zero by means of liquid air have afterwards been found to grow vigorously at a favorable temperature. Germs will also resist dry heat at a temperature of three hundred and two degrees F. above zero. This is two hundred and sixteen degrees below freezing and ninety degrees higher than boiling water. This statement comes from the bacteriologists themselves, and may be proven by anyone who cares to make the experiment.

Does not their power to resist antiseptics, to resist such extremes of heat and cold, their universal presence and power to produce fermentation, prove them the medium through which all organic progress has been made? While the poor deluded germ-doctor is taking the life of one innocent germ, there are one hundred million swarming about his head.

I have endeavored to explain in a brief, practical way the relation which germs bear to the material world, and to the human race.

Now let us listen to the bacteriologists, men who, since the beginning of the germ theory—almost thirty years ago—have been studying germs, raising germs in test tubes and incubators, and then injecting them into animals, that they might have a better opportunity of studying their action.

Surely they ought to know all about it. Let us see.

The following is taken from a leading medical journal, the *Alkaloidal Clinic* of September, '99. In this article the editors have kindly given us the views as

expressed by nearly thirty leading germ theorists; those of this country and Europe. These distinguished bacteriologists have had all the opportunities the world affords for studying their theories. They decided years ago that germs caused disease; they also decided that antitoxins and other preventives manufactured by themselves would kill the germs and cure the patient. They decided that, if their antitoxins were taken before disease gained a foothold the system may be rendered immune; i. e., proof against attack.

In the following article is the explanation(?), showing how immunity is produced. They have been in the immunity business for half a lifetime, and it is but reasonable to suppose that their knowledge of germs and disease corresponds to their understanding of immunity and its cause.

Here are twenty-nine physicians with international reputations as bacteriologists trying to explain how immunity is produced, yet no two of them agree. The Clinic article is not given in full, yet there are twenty-nine quotations giving the views of twenty-nine investigators.

Immunity.

"Immunity is due to the development of bactericidal products in the tissues; to a lack of nourishment in the tissues; to the development of nucleinic acid; to the exhaustion of the supply of pabulum in the body; to the increasing alkalinity of the blood; to alexin; to agglutinin; to immunizing agents stored up; to immunizing agents generated on the spot. Germ invasion

arouses glandular action and the attack is quelled. We know little of antitoxin. Antitoxin develops from the body and not from the bacteria; the problem differs with each organism and analogic deductions are unsafe. There may be other explanations. In the protoplasm of the toxiphoric group of cells the antitoxin is the normal constituent that binds the toxins which pre-exist in the protoplasm (AHEM!). Antitoxin is due to the transformation of the toxins. Sudden death has followed antitoxin. Antitoxin is produced by the body-cells; animals like hens have no cells that are susceptible to tetanus."

From this it is understood that hens do not have lockjaw. How about roosters?

"The onset of disease is due to something in the germ; the duration of the attack is due to something in the body. The toxins arouse glandular action, which should quell the attack. Disease exhausts the supply of pabulum in the body; the agglutinin will cause the germs to stick together so that the alexin can destroy them. An emulsion of brains will cure tetanus. Protection exists in the blood in a negative state; is rendered active on demand. There is in the body some adjustment of forces by which pathogenic bacteria are antagonized and finally disposed of. Still the whole subject is one of nature's tantalizing and well fortified secrets."

Such a juggling of words would be called pure delirium if they did not eminate from those who claim to be authority. This claim is supposed to entitle them to a certain amount of respect. Let us make a prac-

tical application of the knowledge(?) possessed by these theorizing germ-specialists. In the following imaginary conversation the quotations just given are used by the doctor in answering the patient:

"Doctor, what is the cause of my sickness?"

"In disease like yours, 'the problem differs with each organism and analogic deductions are unsafe; the whole subject is one of nature's tantalizing and well fortified secrets.'"

"Doctor, do you think I will be sick long?"

"In this case, 'the onset is due to something in the germ; the duration of the attack depends upon the resistance of the body; the toxins arouse glandular action which should quell the attack.'"

"Doctor, what is your treatment?"

"I think the disease will 'exhaust the supply of pabulum in the body; the agglutinin will cause the bacteria to stick together and that the alexin can destroy them.'"

"Doctor, do you use antitoxin?"

"'We know little of antitoxin, yet there is in the body some adjustment of forces by which pathogenic bacteria are antagonized and finally destroyed.'"

"Doctor, do you consider antitoxin safe?"

"'Sudden death has followed antitoxin, yet in the protoplasm of the toxiphoric group of cells the antitoxin is the normal constituent that binds the toxin, which pre-exists in the protoplasm.'"

"Doctor, can't you use some other remedy in my case?"

"'Yes, an emulsion of brains has the power to neu-

tralize poison and cure disease, still is the whole subject one of nature's tantalizing and well fortified secrets.' "

Patients are reminded that bacterioligists never furnish brains.

Look out for the toxiphoric group of cells!

Poultry-raisers should not feel too jubilant because their old hens are excused from lockjaw, for the chickens may still die of the pip.

The bacteriologists remind us of the story of the stage-driver who, after receiving much praise for the fine appearance of one of his horses, exclaimed: "That 'oss ain't so good as he looks; he's a scientific 'oss." On being asked to explain the driver said: "A scientific 'oss is one as thinks he knows a great deal more nor he does."

We are also reminded of the old negro doctor who was fond of using long words, and who frequently used the word intertranssubstantiationableness. One day a patient said to him: "Why, doctor; you do not even know the meaning of that word." The old doctor replied, "P'r'aps not, sah; p'r'aps not; but I have noticed when in doubtful places, sah, that I have used that word with spontaneous effect."

We have just listened to the explanation of "immunity;" now, let us listen to an explanation regarding the cause of influenza. Page 85, Merks' Archives for February, 1899, contains the following quotation from Doctor Finkler, a prominent germ theorist. Doctor Finkler says: "I am inclined to accept the views of Doctor Leichtenstein, that there exists a pandemic

influence caused by the Pfeiffer's bacillus, and also an epidemico-endemic influenza of identical nature, which develops after the pandemic infection has run its course, being caused by germs left over."

Comment is unnecessary. Undoubtedly the bacteriologists dislike to use so many technicalities as presented in Doctor Finkler's explanation(?), yet they find it necessary when they wish to convey a meaning(?) which no one can understand.

Wonder what became of the germs "left over?"

To get a clearer understanding of what this theorizing germ specialist is telling us, let us remember that an "epidemic" disease is one that spreads rapidly through a community where it does not usually prevail; an "endemic" disease is one continually present in a community and dependent upon local conditions; a "pandemic" disease is one affecting a whole country, but this investigator says, in substance, that "grip is a pandemic, epidemico-endemic disease," and "caused by germs left over."

We can understand the boy who said he wore a wooden leg because it run in the family; we can understand the noted Philadelphia doctor who instructed his patient to take a teaspoonful at bedtime if unable to sleep in water; we can understand why a bugler's note never comes due, but we cannot understand how the same germ can produce so many diseases at one and the same time.

The explanation of immunity and of influenza, as furnished by bacteriologists, reminds us of that class

of gentlemen sometimes known as traveling doctors. When asked to explain the cause of disease they confound their hearers with high-sounding words. Many who listen do not understand their meaning, but they suppose any one capable of using such language must be very smart. Their explanation of disease runs something like this:

"The only legitimate manner of accounting for this very rare disease is the physiological defect in the membranous system; the obtuseness of the abdominal abdicator causes the cartilaginous compressor to coagulate into the diaphragm, and this depresses the duodenum into the flandango. Now, if the disease were caused by the vogatum of the electricity from the extremities, the tympanum would also dissolve into the spiritual sinctum, and the olfactory ossificator would ferment and become identical with the pigmentum. But as this is not the case, in order to produce this disease the spinal rotundum must be elevated down to the spiritual spero, and as I said before, in order to produce this very rare disease, the inferior ligaments must subtend over the digitorum sufficient to disorganize the stericoletum."

Some people believe bacteriology is a powerful aid in preventing as well as curing disease. Let us inquire what the germ-specialists are doing for diseased humanity any way? Have they helped mankind to fight disease? Have they conquered the germ? Is disease less malignant?

For twenty-five years bacteriologists have been raising germs in little glass tubes, and after they had them

started they began to deluge them with corrosive sublimate solution, carbolic acid solution and all other known disinfectants. They froze them, dried them, and through their influence the country has spent millions of dollars to check their growth and toxicity.

Did they succeed?

"We are surrounded by bacteriologists and quarantine officials, and by them the confines of civilization are marked off with a line of formaldehyde, and the four corners of Christendom are stacked with barrels of carbolic acid, and into these we must be dipped before we can enter the aseptic realm of the bacteriological field. And as we enter the holy of holies we remember the germs we leave behind are in duplicate quadrillions in every swamp, frog-pond and alley.

The records show that just as many people, or just as many sick people, die now with disease—any disease—as twenty-five years ago. Out of a given number of cases of pneumonia, consumption, diphtheria or any other disease, just as many people die now as before the germ theory. A man dying of consumption to-day, and ignorant of the germ theory, would not die one day sooner, or if he knew all about the germ theory he would not live one day longer. Bacteriology does not help the consumptive to breathe any deeper, to digest his food any better, to sleep any better, or cough any less.

In any city may be found the number of deaths each month in the year. These records may show that deaths from certain diseases are becoming gradually less, but the death-rate among a given number of sick

people is as large as before; the death-rate among the whole population is less, because fewer people are sick. Why are fewer people sick? Because there are more sewers in the towns and cities, less filth in the alleys, more attention paid to ventilation; because contagious swamps, lowlands and frog-ponds have been cleared up, and an air of general cleanliness pervades many localities that in former years were dumping grounds for all kinds of filth. In a word, because of the advance in hygienic science for which bacteriology can claim no credit.

Epidemics that swept away large percentages of the population in earlier years are practically exterminated, not by the bacteriologist, but for the reasons just given and because fields have been cultivated, thus exposing unhealthy soil to the purifying effects of the atmosphere and the sun's rays. Again, people are better fed and better clothed, hence better able to resist.

These are the reasons that fewer people are sick, and these are conditions with which bacteriology has had nothing to do, absolutely nothing. Banish dirt and disease disappears. Havana and Santiago had for years been pest holes for yellow fever, but when Americans went over and carried away the heaps of ancient rubbish, and emptied the overflowing cess pools, yellow fever vanished.

Influenza, or grip, is present in different parts of the country nearly all the year round. We do not fear it as we do diphtheria, smallpox or cholera because it seldom causes death directly, yet disease resulting from it, pneumonia, bronchitis, consumption, etc., causes

more deaths than any and all epidemics. In this disease as in many others the bacteriologists have traced the germ throughout; they have raised millions of them; they have observed their death-struggles in their patent serums or antitoxins, yet all understand that the applied teachings of bacteriology will not cure the grip, neither will it cure typhoid fever, diphtheria, consumption or hiccough. When virulent cases are met the physician of experience will seek the cause in the sanitary condition of the premises and not in the species of germs or other microbes revealed by the microscope.

One large patent medicine company, taking advantage of the germ theories, says: "The germs lie in wait for human life on every side. Twenty per cent of the dairy cows of the United States are tuberculous, and the average grade of milk sold in large cities contains as high as eighty million germs in a cubic inch. These facts are appalling. The very existence of the human race seems threatened. So fast indeed are new parasites being produced that were not science constantly elaborating counter checks our boasted civilization would soon come to the end of its tether. One of the greatest counter checks to disease is our remedies," etc.

First, this wide-awake patent medicine firm would make it appear that there are eighty million so called consumptive germs to each cubic inch of milk. Milk may contain millions of germs, whether they are the so called consumptive germ or not, makes little difference. The water we drink contains millions of germs also. So does the air we breathe and the food we eat.

After covering nearly half a page in a large newspaper, this startling advertising firm states that their remedies "make the body practically impregnable against disease." Then follow personal letters from many, who "owe their lives to this wonderful medicine;" others "thank God for their deliverance," etc. No wonder people are sick!

This wide-awake patent medicine firm has used bacteriology as a means for securing financial returns and as a means of support while sending out their delusive advertisements.

Such talk only causes a morbid fascination, a fear which lowers the powers of resistance and is a factor in spreading disease. An unhealthy imagination is undoubtedly the starting point of many diseases. Although some of these diseases remind us of the man who, when asked why he did not work, said his wife had been studying the health journal and that she had concluded that he had a tendency to softening of the brain with complicated symptoms of Bright's disease, palpitation of the heart, inflammation of the lungs, cremation of the spleen, indignation of the esophagus, hypertrophy of the palate, distant symptoms of liver complaint and some internal evidence of paralysis. Besides that the man claimed he was not feeling well.

The bacteriologists have surrounded us with so many perils that suicide would seem our only means of escape. According to them it is not safe to breathe for fear of taking in the tubercular germ, or to eat or drink for fear of taking in the typhoid germ, while kissing your

best girl is fraught with dangers too numerous to mention and too terrible to contemplate. A germ bulletin published by one of our State Boards of Health for August, 1899, Bulletin No. 17, referring to what they call "Dangerous communicable disease," says that each one of these diseases is caused by one or more specific germs.

Referring to influenza the bulletin says: "The presence of the germs corresponds with the course of the disease, and they disappear with the cessation of the purulent bronchial secretions." That is not evidence that influenza is caused by a germ, but is the very best evidence that it is not caused by a germ. While the mucous membrane was inflamed there was more or less destruction of tissue, and it was necessary that such tissue be reduced and eliminated, and germs were present for that purpose. By their power to produce fermentation they formed the "purulent" matter, but as soon as the mucous membrane returned to health the germs were expelled without ceremony.

Again, the germ bulletin says: "Only upon apes and rabbits have inoculation experiments with this germ been successful in producing symptoms of the disease." Here, again, after inoculation; i. e., injecting the germs beneath the skin and into the system, they could not produce the disease, and even in "apes and rabbits" they could only produce "symptoms." That ought to satisfy the most sensitive mind. "Only upon apes and rabbits." A man may and sometimes does make a monkey of himself, but there is no evidence

that he ever degenerated to the ape family. Thanks to bacteriology for saving us from the ravages of at least one germ.

The bulletin enumerates four different germs, any one of which may cause pneumonia. The solution of this is very simple. Different germs may be found in the lungs during an attack of pneumonia, having been conveyed there by respiration. The bulletin says: "While there is a general consensus of opinion among investigators that the germ diplococcus intracellularis meningitis is usually the specific cause of cerebrospinal meningitis, there is abundant evidence to show that the germ of pneumonia is frequently responsible for this disease." First, they tell us that any one of four germs may cause pneumonia, then they add one more, making five, any one of which may cause cerebrospinal meningitis, but the solution is the same as the one just given.

The different germs pass from the mouth into the stomach, and when the stomach is unhealthy some germs find their way into the circulation, and during cerebrospinal meningitis, which is inflammation of the membrane covering the brain and spinal cord, some germs lodge in that part of the membrane destroyed by disease. They have had nothing to do with producing the disease, and their numbers will depend upon the amount of tissue the inflammation destroys. If they could have produced disease they would not have waited until they reached the brain.

Green's Pathology says, page 428, that the so called pneumonia germ has been found in ulceration of the

delicate membrane which lines the heart cavities (ulcerative endocarditis), yet bacteriologists do not pretend the germs caused the disease. How did it get there? The same as in meningitis, inflammation had destroyed some of the membrane lining the heart-cavities and the germs lodged in this dead and dying tissue.

The bulletin quoted says: "Extensive observations in the morgues of large cities prove that even a large proportion of persons dead from other causes have recovered from consumption." More or less of the discharges from the lungs of a consumptive are swallowed. It is impossible to prevent it. This gives the so called consumptive germ the freedom of the stomach and entire digestive tract, yet bacteriologists tell us, "A large proportion of persons dead from other causes have recovered from consumption." This is an important admission, only because it comes from the bacteriologists.

Every bacteriologist understands that the human saliva or secretions of the mouth offer an excellent, if not the best, field for the growth and development of all forms of germs. The moisture, food, salts and warmth are adapted to their growth, and as a result every germ known to bacteriology may be and is found in the mouth at all times. The so called germs of pneumonia, consumption, typhoid and others are present in varying numbers. It is the action of germs that causes the teeth to decay. The constant changes produced by germs result in a mild form of fermentation as already explained. New substances are produced

mostly acids, as in the souring of milk. These acids unite with the calcium or lime of which the teeth are formed and little by little the teeth are destroyed. Thousands of germs find their way from the mouth into the air-passages, stomach, etc., and when the system is unhealthy many enter the circulation. That is why so many can be found in the lungs in pneumonia and grip.

An article appearing on page 184 of the *Physician and Surgeon* for April, 1900, contains the following under the head of influenza: In this disease "bacteriologists may find present in the lungs, throat and sputum, respectively, the pneumonia germ, tubercular germ and diphtheria germ, but on closest inspection and investigation fail to find present the diseases attributed to these germs."

Germs are continually being carried downward by the act of swallowing, and if they live in the system long enough to reach tissue that has been destroyed by disease they lodge in such tissue and reduce it. In the system as well as out germs are the medium by which nature reduces dead matter, by which the dead is made to support the living, and all the theories bacteriology can advance will neither change or improve this plan.

The *Physician and Surgeon* for December, 1899, contains an article under the head of consumption, in which it states that "certain forms of this infection (consumption) occur in which no tubercular bacillus can be found, and these cases have come to be recognized as cases of pseudo tuberculosis."

These cases are not "false." The reason germs are not present in the diseased tissue is that, notwithstanding the man has consumption, there still remains sufficient vitality to overcome germ-life before they reach the diseased lung. In such cases germs would be absent.

Bacteriologists cannot produce the slightest evidence that germs cause disease in man. They can produce theory and that is all. Even Green's Pathology, while it supports bacteriology, says (page 272): "Germs are believed to produce the infective diseases." Under consumption (page 358) this same standard authority says: "Fatty changes, caseation, etc., are probably due to germs." Depend upon such evidence in court and see how quickly you lose your case.

It has just been stated that bacteriologists can only produce theory, and following is the definition of disease as taught by one of the leading medical colleges: "An infectious disease is one in which a pathogenic germ enters the body, grows, multiplies and produces poisons that directly cause disease, hence no disease is infectious that is not a germ-disease. Therefore, every infectious disease points directly to a germ, whether a germ has been found or not." This is only theory, and it is unnecessary to add that if bacteriologists could teach something better than theory they would do so.

Many who accept the germ theories do so without thought or study. The self-constituted leaders tell them they have made such and such discoveries, and their followers, supposing the statements to be true,

quietly accept and pass on. The writer understands that there are many bacteriologists who will laugh at any statements made against their theories; against their discoveries(?), or against their experiments, which are made upon guinea pigs, rabbits, Algerian rats, yellow dogs, etc., which have been deprived of their liberty, cooped up in a cage, packed away in some garret, foul-smelling laboratory, or half starved for the occasion. After inoculating the animals just mentioned the operators, more or less fatigued, sit manfully by and watch the flickering pulse while life goes out. The reader should remember that it is only after experiments like these that bacteriologists are enabled to fight disease intelligently. The bacteriologists obtain all their theories by experiments upon the lower animals, yet such experiments amount to nothing, absolutely nothing.

In the *Physician and Surgeon* for June, 1900, page 272, it is shown that "guinea pigs can be rendered tuberculous by inoculating them with pus from various sources, pieces of thread charged with vaccine lymph, putrid muscle, or after introducing a clean seton of unbleached cotton; nay, even giving a guinea pig a brisk pinch in the flank has been known to produce the same results"—tuberculosis. And yet the bacteriologist claims tuberculosis cannot be produced without the tubercle bacilli.

The article just mentioned is supported by many leading authorities. Green's Pathology, page 363, states that tuberculosis may be produced in animals by the irritation of setons of vaccine, bits of cork or paper.

Dr. Evans states that by making single incisions in pigs they afterwards perished of abscess at the seat of injury, and miliary tuberculosis in the various organs.

Guinea pigs are said to be one hundred times as susceptible to disease as man, hence it is plainly evident that experiments upon such animals amount to nothing unless it is to add to the false theories which bacteriology is continually sending forth. Laboratory experiments have nothing to do with disease in man. There never was an animal inoculated or experimented upon without having its powers of resistance or vitality lowered through fear, and also by its unnatural surroundings; for now it is a prisoner, its spirit of freedom is replaced by one of subjection.

"The grey forest eagle—Oh! where has he fled?
Does he shrink to his eyrie, shiv'ring with dread?
Does the lightning blind his eye? Has the terrible blast
O'er the wing of the Sky-king a fear-fetter cast?
Ah! No, No; the brave eagle thinks not of flight;
The wrath of the tempest but rouses delight.
To the flash of the lightning his eye casts a gleam;
To the shriek of the wild blast he echoes a scream.
With front like a warrior spread to the fray,
With clapping of pinions he's up and away.
Aye, Away! Away soars the fearless and free;
Reckless of sky-strife, its monarch is he.
The lightning darts round him—undaunted his flight;
Still upward, high upward, he wheels, 'till his form
Is lost in the black, scowling gloom of the storm."

Imprison this same bird and it may droop and die in a few weeks without inoculation or experiment.

Bacteriologists make a great many experiments upon birds as well as guinea pigs and other animals (man included). These experiments are worse than useless because they are misleading; yet, unthinking and susceptible, legislators have been juggled into passing laws giving these experimenters, in the form of Health Boards, full power to control the intelligent physician.

As already stated, germs are everywhere present, earth, air and water contain them in great numbers. We eat, drink and inhale millions of them daily. They have existed since creation began. They are most abundant in low places, being drawn down by gravitation, and also because there is more heat and moisture which favor their development. They cannot live in healthy animal tissue. They develop just as a seed develops. If they develop in the human body; the body was diseased before their entrance. Under the proper conditions germs multiply and perform their part in the changes going on all about us.

Bacteriologists call the germ theory a new discovery, yet germs are as old as matter. Germs are nature's scavengers which consume corruption. They are as old as life, but the cause of disease remains just where it was before the first investigator discovered his first bug. By studying germs we can no more understand the cause of disease than we can understand an elephant by studying the flea which lights on its ear.

In a certain disease one kind of a germ is found, and in another disease another kind of a germ is found, and so bacteriologists tell us these different diseases are caused by the diffent germs. Is that true? No,

the different germs are found in the different diseases because of the different variety of nourishment provided. This nourishment may be the accumulation in the system of natural waste products, or may include tissue that has been destroyed by disease. Through the circulation the same kind of food is carried to the different cells of which the body is formed. But the cells do not admit all kinds of nourishment. They exhibit a marked selective power, hence muscle-cells are formed of one kind of matter, bone-cells of another, liver-cells of another, and those of the central nervous system another, etc. Muscle-cells have the power of expension and contraction, giving the power of motion. Bone-cells are two-thirds lime salts, giving solidity to the framework. Bone is said to be twice as strong as oak. The liver-cells manufacture bile, which aids digestion, while the brain-cells are the seat of reason, judgment, memory, emotion, sensation, pleasure, pain and all that we see, hear, enjoy or suffer.

Why this difference? Because each cell absorbs different nourishment. It is necessary that the different cells select different food-elements because of their several duties, hence their selective power. It is also necessary that other cells called germs select different food-elements, because of their several duties. Some germs find such elements in diseased brain or liver tissue as in brain-disease or liver-abscess; some in dead and dying lung-tissue, as in grip, pneumonia, bronchitis or consumption, and some in a diseased digestive tract, as in typhoid fever.

As just mentioned, these different organs and tissues

contain different food-elements, hence when diseased they are inhabited by different germs. Nature did not design that the different germs should all absorb nourishment from one kind of diseased and worn out tissue any more than all kinds of plant-life should absorb nourishment from one kind of soil, or that all animal life should live upon one kind of food. The result is perfectly natural. In each case the presence of the germ corresponds to a universal law; and, as already stated, the action of the germs separates the elements of the tissues destroyed by disease, and thus aids in elimination.

Doctor Osler says: "The food supply of many germs consists of dead animal and vegetable materials, a few living tissues, while a small number exists wholly upon mineral salts, and even the nitrogen of the air."

The germ doctors tell us that a consumptive expectorates, the sputum dries and as the wind caroms around some corner it gathers up some of these germs and they go whirling through the air until they are inhaled by some passer-by, and then he is a "goner."

That reminds us of the following words, which are said to be indelibly stamped upon the brain of every Californian, by reason of so many health-seeking consumptives:

"What e'er you do, where e'er you go,
From Golden Gate to Shasta's snow,
From Pablo Bay to Phoenix sands,
O'er peak, o'er plain, through all the lands
That form the vast Pacific slope,
I pray you, and I truly hope
That as you go from state to state
You never will expectorate.

I say this to you now because
In all these parts they have made laws
That don't allow men who are free
To chew and spit promiscuously;
And they have nailed up everywhere
These words that tell us to beware
Of laws passed by each Far West State,
Do not, do not expectorate.

The tourist comes out from the East,
He brings his lungs—or one at least—
He leans against a poplar tree,
He coughs, and coughs so wearily,
He chokes, and gasps, prepares to spit,
When with these words his ear is hit—
"See here, friend 'lunger,' don't you see
That sign tacked there upon that tree?"

"Can you not read the words so plain?
You better not cough here again;
We don't allow in this 'ere town
No man, though white, or black, or brown,
To cough and throw himself around
In little chunks upon the ground;
I'm Marshal here, and let me state,
You better not expectorate."

"My God, where can I go!" he cries,
This tourist man with hectic eyes,
"To death I will myself resign!
All through your town I saw your sign,
And crawled out here, and thought perhaps
I could spit once 'ere I collapse;
But here it is, as sure as fate—
'Do not, do not expectorate.'"

A smothered cough, a groan, and then
(Excuse me, we are all neat men,
The word to use it rhymes with sob)
From the poor tourist falls a ———.

The marshal clubs him down the street,
He tells the justice, whom they meet,
The justice he don't do a thing
But sentence him to San Quentin."

The *Physician and Surgeon* contains in its March number of 1900, page 125, an article written by a bacteriologist, in which he states: "The tubercle bacillus has been found everywhere tuberculous patients move. What we eat, what we drink, the houses in which we live, the clothes we wear, the furniture, the draperies, the carpets covering the floor, the dust in the streets, the air in the electric car, the luxurious seats of the palace car, the bedding of the magnificent sleeping coaches, the richly furnished apartments of our modern hotels, the modest rooms of the common boarding-houses, the state-rooms of our steamers, the air in the crowded store, public buildings, churches, assembly rooms, theaters, libraries, the dentist chair, the operating tables in the hospital, the ambulance carrying the wounded and sick, the crowded waiting-rooms of lawyers and doctors, the court-room, the concert halls, the hospitals, all of these are liable to be infected by the tubercle bacillus."

They also tell us consumption is contagious. Can any one reconcile the two statements?

Prof. Osler says the distribution of germs is well nigh universal, occuring as they do in the air we breathe, the water and milk we drink, upon the exposed surfaces of man and animals, and in the digestive tract, and in the soil to a depth of about nine feet. But it has been noted that at very high altitudes and in glacier

ice none exist, while in arctic regions and at sea far from land their numbers are very few.

William F. Waugh, A. M. M. D., that well known medical author, says in his *Treatment of the Sick,* page 331: "During my service as medical inspector of the Philadelphia Board of Health I had opportunity of noticing the environment of many cases of infectious diseases, and in every case the severity depended on the hygienic conditions. Offensive cesspools leaking into cellars, filth in yard, alley, gutter or street were the very obvious cause of malignancy." He says, "In every case of infectious disease the severity depended upon the hygienic conditions."

Could words be plainer? Do germs cause malignant disease? Or is the system overcome by unhealthy conditions, both external and internal?

Some bacteriologists claim that malignant disease is caused by mixed infection; i. e., instead of one germ there are two or more varieties present in the system. Yet the reader should remember that dead and dying tissue always contains a variety of germs.

An animal dies out in the field. Are all the various species of flies and other insects obliged to stand back and look on because a certain bug has chosen the dead body for its field of operation? No, but every species of animal life that can creep, crawl, walk, run or fly; every insect or other minute life that floats through the air, makes haste to occupy a position on the dead body and enjoy the feast. So, also, when disease destroys tissue in the human system. The man with the microscope may find more than one kind of germ,

sometimes finding a greater and sometimes a lesser variety.

Where the power of the bacteriologists should avail much they are powerless. They may have the advantage when they have the germs planted in incubators, but in the human system it is different, and the germs enjoy the change; for, in experimental work, these germs have been passed back and forth so many times from guinea pigs, rabbits and white rats that life began to be a burden, but buried within the hidden recesses of the human body they can enjoy life in spite of the bacteriologists and their theories.

Are the bacteriologists theorizing? Let us see. Human blood contains many small bodies or particles of matter called corpuscles. Vast numbers of these float along with the blood-stream. There are two principal varieties, red and white. The red possess great power to absorb oxygen, and in their passage through the lungs they absorb oxygen from the air we breathe, and through the circulation carry it to different parts of the body. The oxygen aids in the changes which are constantly going on in the human system; aids that form of digestion carried on in the circulation. The oxygen gives life, force and energy. It is these cells or corpuscles which give to the blood its bright red color.

Bacteriologists tell us that the white corpuscles act as a body-guard; they are a standing army for the purpose of protecting the body from invasions from without, and that when germs attack the system these white corpuscles are greatly increased in numbers; the

system furnishing them on demand, and that then there is a great battle, and if the corpuscles win there is no disease; but if they are defeated disease follows; the germs dying later, largely from the effects of their own poison. This is known as Metschnikoff's theory. Note the word "theory."

Unless the story of the white corpuscles is true in all cases it is not true in any, and it is not true in all, for there is no increase in the white corpuscles in typhoid fever, consumption, in many cases of diphtheria, in leucocythemia, and many other diseases.

In the disease leucocythemia there is an enormous increase in the white corpuscles and yet this disease is not caused by germs. No one claims it is. Here we find the condition exactly opposite to Doctor Metschnikoff's "theory." Will some State Board of Health clear up the trouble? And yet this is hardly a fair question, for each health board has "troubles of its own." Their whole existence is a vast sea of trouble, their greatest trouble is to keep up with their own theories; i. e., to prepare new theories as fast as they discard old ones.

Dr. Metschnikoff, a Russian, was the first to give us the astounding information that when the system is attacked with germs the white corpuscles instantly respond to the call to arms; they throw out skirmish lines; divide the main army into squads; surround the invading germs; fall upon them and destroy them. This is called phagocytosis. The professor says sometimes the germs "play possum," and when the white corpuscles are carrying them away captives, the germs

suddenly and unexpectedly attack the corpuscles, and with the advantage thus gained, may succeed in killing them. The germs are now at liberty to produce disease wherever they may be, and that is the reason people have rheumatism, consumption and other diseases in different parts of the body; in the ankle, knee, hip or shoulder joint; consumption of the brain, inflammation of the spinal cord, etc. Such a theory is a great detriment to the young doctors who are turned out to experiment upon human life.

Following is the cause for an occasional increase in the white corpuscles: The white corpuscles increase at certain times because the nerves which supply the glands or tissues producing them are stimulated; such stimulation being the result of certain irritating substances or poisons generated in the system. Some kinds of poisons stimulate this system of nerves and some do not. The same is true of poisons that are used in medicine. Some stimulate certain nerves and some do not. Digitalis stimulates the nerves that control the size of the blood-vessels, and the vessels contract. Belladonna paralyzes these nerves and the vessels dilate. Strychnine stimulates the nerves which supply the muscles, and if enough is given some muscles may escape the control of the individual, and the arms and feet fly in all directions, or the spasm may include all the muscles at one time, and the body will become rigid. Opium paralyzes these same nerves and the system is completely relaxed. Atropin paralyzes the nerves supplying the glands of the skin, mouth, throat and other parts of the body, and they fail to act.

Pilocarpine stimulates the same nerves and they pour out large amounts of fluid. Chloroform weakens the nerve supplying the heart, glonoin strengthens it.

The poison generated in the system and which causes typhoid fever and other diseases mentioned, does not stimulate the nerves supplying the glands or tissues which produce the white corpuscles, hence there is no increase. These nerves are stimulated by other self-generated poisons, and there is an increase. This accounts for the disease Leucocythemia, already mentioned, in which there is an enormous increase in the white corpuscles.

The spleen and lymph glands of the body are the structures which supply the white corpuscles, and in Leucocythemia these are all enlarged showing over-stimulation. The spleen may become so large as to nearly fill the whole of the abdominal cavity. The spleen enlarges more than other glands, because its blood-supply is proportionately larger, and the blood-vessels are not continued through the organ as through other structures, but the circulation is continued through openings that are channeled through the spleen itself. This brings the irritating blood in direct contact with the spleenic tissues.

The liver is also much enlarged, because the veins from the spleen empty directly into the liver. The white corpuscles become so numerous that the blood loses its red color and looks almost white. The pressure of the spleen and liver interfere with the lung-action and respiration is lessened. The pressure also interferes with the heart-action and there is weakness

of this organ, both from pressure and lack of nourishment. These cases do not occur often, but they are always fatal and the cause has never been given. There is no known treatment that is of benefit.

But if germs are the special enemy of the white corpuscles, and the white corpuscles the only enemy of the germs, as claimed by the bacteriologist, then here is a chance to use germs to advantage, literally feed the man on germs, the more virulent or poisonous the better. Let them destroy the white corpuscles and bring the patient back to health.

Bacteriologists do not pretend that Leucocythemia is caused by germs, yet there is an enormous increase in the white corpuscles. Again, the bacteriologists claim that these white corpuscles only increase when there is danger from invading germs.

Bacteriologists teach that in case of accident the system sends great numbers of these white corpuscles to the point of injury for the purpose of protecting the part from germ invasion. Is that true?

Injury that produces swelling and inflammation also paralyzes the nerves which control the size of the small blood-vessels, and the vessels dilate. In proportion to such enlargement the circulation is lessened. Every one understands that a broad creek or river will not flow as rapidly as the same amount of water in a narrower channel. The same is true with the circulation. When the arteries broaden the circulation becomes sluggish. In this sluggish circulation the white corpuscles collect, just as driftwood carried by a creek or

river collects where the stream is broad and the current slackened.

Instead of the white corpuscles being sent to the point of injury they collect there by reason of a sluggish circulation. To prove this we only have to remember that during health they are more numerous in the veins than in the arteries. The circulation is naturally more sluggish in the veins because the veins are larger. Their increase at the point of injury is mechanical.

Do the white corpuscles ever escape from the arteries into the surrounding tissue and destroy germs as claimed by Prof. Metschnikoff and his followers?

When poison or injury causes the vessels to dilate with a corresponding slowing of the current, as described, the white corpuscles, being much larger than the red ones, naturally drift to one side. It would be impossble to keep a heavy timber in the center of a swiftly moving current or stream. The timber would seek the first cove and remain under some sheltering bank. That is why driftwood is always found along the shore. It is the same with the white corpuscles; being much larger than the red ones they cling along the sides of the vessels, and as the vessels dilate the walls become correspondingly thinner and many white corpuscles pass through. The more the vessels are stretched the easier the white corpuscles can escape.

The pus contained in every abscess is made up largely of white corpuscles; they accumulate at the point of inflammation in the manner described, tumble around,

die, and are converted into pus, proving conclusively that their action is only mechanical. The bacteriologists do not pretend that the red corpuscles are germ destroyers, or that nature has given them any power to pass out of the vessels and invade surrunding tissues, yet when the arteries dilate sufficiently and the circulation has slowed down to a certain rate, the red corpuscles do pass through, showing the change is mechanical. They would have passed through before, but they were so small and light that they kept in the center of the stream. It is these red corpuscles that gives redness to a swollen and inflamed part.

Bacteriology claims the white corpuscles have the power to roam through the system at will and that they do this in order to seek out and destroy any invading germs, and thus render the body free from disease. Is that true? The white corpuscles are a soft protoplasmic mass, and they have the same power of motion that the white of an egg has when placed in the hand and allowed to slip through between the fingers. That is the way they pass through the arteries and other tissues, finding their way between the little cells of which the arteries and other structures are formed.

Do the white corpuscles have the power to attack and destroy germs as claimed by Prof. Metschnikoff and his followers? A professor in one of our leading universities, medical department, uses these words: "The white corpuscles make a wholesale attack upon the germs, catch and overpower them, gulp them down, and then secrete a poison which destroys them and they pass into solution."

Prof. Osler says, "Armies of white cells rush to the fray and attempt to eat up and destroy the foe, but possibly in vain, the disease runs its course."

But if nature has created the white cells or corpuscles for the purpose of destroying germs, then, according to bacteriology, nature has made a mistake, for Dr. Osler states, and all bacteriologists admit, that the white cells often fail and "the disease runs its course." Bacteriologists should stop theorizing long enough to learn that if the Divine Architect had designed the white cell to protect the body from invading germs they would do so. Every germ that enters the human system would be destroyed, but instead of this the white cells are the ones to suffer. Every abscess and pus cavities are filled largely with white cells which serve as food for the germs present.

Do the white cells ever destroy germs, as claimed by the professors?

These questions may be answered as follows: Germs are many times smaller than the white corpuscles, therefore germs may sometimes be found in the substance of the white cells.

How did they get there?

By absorption, just as particles of dirt floating in water are absorbed by a sponge. But there is not the slightest evidence that the germs were alive when absorbed by the white cells.

Can the white corpuscles furnish a secretion that will destroy germs?

The secretions of the white cells in the human body have the power to destroy life in other cells called

germs. This power is not confined to the white corpuscles, however, but is true of every cell in the body. The white corpuscles are perhaps of least importance in this particular. Millions of live germs enter the system every day. They are always dead when eliminated from a healthy body. This is a fact which every bacteriologist understands. The secretions of every organ in the body, and of all the tissues, have the power to destroy germs. The cells of the digestive organs, those which furnish the digestive fluids, are far more powerful in destroying germs and neutralizing poison than the white corpuscles, yet the bacteriologist would have use believe the white corpuscles alone possess this power. Take a consumptive; usually the diseased lungs are literally loaded with germs, and as fast as the lung tissue is destroyed it is expectorated, and millions of germs are swallowed. They are poured into the stomach in great numbers; it cannot be otherwise. No one pretends and even the bacteriologists do not claim that the white corpuscles or cells follow the germs into the stomach and destroy them.

Do the germs cause disease of the digestive tract?

No, everyone understands that consumption of the digestive tract is seldom met with, even in those who have consumption of the lungs.

Are the germs eliminated alive?

No, the bacteriologists themselves tell us germs are always dead when eliminated.

Then, if they are dead and the white corpuscles do not kill them, what does?

Why, the cells of the digestive tract, of course; i. e., the digestive fluids furnished by those cells.

The stomach is the place where germs enter in the largest numbers, hence it is good sense to believe that the cells of this organ are most powerful in destroying them. Human blood is also a powerful germ destroyer.

It has been stated that bacteriology rests upon nothing real, and is supported only by theory. In the foregoing pages the author has endeavored to prove that statement true. Look at it another way.

Maggots do not cause wood to rot. Their presence only indicates that such material furnishes nourishment upon which they can develop. Germs do not cause disease. Their presence only indicates that tissue destroyed by disease furnishes nourishment upon which they can develop. Germs are scavengers feeding upon dead tissue. Maggots are scavengers feeding upon rotten wood.

The mechanic strikes his finger with the hammer; the finger swells, turns black and later some of the cells or tissues destroyed by the blow, liquefy and are discharged as pus. The microscope would reveal millions of germs in this pus, yet all would understand that it was the blow from the hammer and not the germs that caused the abscess.

Take a burn, where the skin and some of the deeper structures are destroyed. Soon this dead tissue is filled with germs, and by their power to decompose dead matter, the germs break down or separate the elements of the tissues destroyed by the burn, some in the form

of gases and some in the form of pus, and as fast as the dead matter is removed healthy tissue forms and gradually the wound heals. The microscope would reveal millions of germs in the dead tissue and in the pus, yet all would understand it was the burn and not the germs that caused the disease, but the germ action aided materially in the process of healing, for without such action the tissues destroyed by the hammer or the fire would not have been removed, but would have remained in a mummified condition. Green's Pathology states, page 270, and every pathologist understands, that "all processes comprised in the terms fermentation and putrefaction are due to the action of vegetable organisms."

Some bacteriologists admit that such germ action and elimination is an advantage to the patient, but claim that when the dead matter is removed the germs, with the advantage gained, continue to do business at the old stand. In other words, there are some who do not claim that germs are the primary or first cause of disease, but that disease allows their development in the system, after which they attack the surrounding tissues and thus cause chronic disease and fatal termination.

Is that true?

Let us make a few practical applications. Let us take those diseases in which there are a large number of germs present. There are millions of germs in the pus contained in every felon, boil, or carbuncle, yet these cases usually heal promptly and the individual forgets all about them. A man breaks his leg. It is a

compound fracture; i. e., the broken ends of the bone project through the skin. The wound does not heal readily and pus forms. The microscope would reveal millions of germs present, yet no one would be foolish enough to believe that the germs caused the disease. All would understand that they were the result and not the cause.

Take diseases that are more grave; diseases that are most dangerous to human life, and also those which contain the greatest number of germs. Typhoid fever, where many ulcers or pus cavities are formed; ulcer of the stomach, pneumonia, consumption, abscess of the abdominal cavity in appendicitis, etc. In each of these germs are present in vast numbers, yet everyone understands that these cases usually recover. Recovery is the rule in typhoid fever and pneumonia. Ninety per cent of those having appendicitis recover without operation, and as already stated, the bacteriologists themselves admit that "extensive observations in the morgues of large cities prove that even a large proportion of persons dead from other causes have recovered from consumption."

Doctor Ingals of Chicago is quoted as saying that "ninety per cent of all people have consumption sometime." This is a sweeping statement of the prevalence of consumption, but observation and experience bear it out.

It is stated editorially in the December, 1900, *Alkaloidal Clinic*, page 931, that Naegeli found, with improved methods of post-mortem examinations and investigations, that one hundred per cent of adults

examined presented evidence of tubercular lesions, and claimed that every adult is tuberculous. But the strong are able to transform an active lesion into a latent inactive process.

Bacteriologists claim consumption is caused by a certain specific germ. Yet post-mortem examinations prove that in the great majority of cases, if not all, that germs have been present to the extent of causing cavities in the lungs, yet the patient recovered and died later from other causes. Does the reader suppose that if germs can cause consumption, and if the disease had so far progressed as to cause the characteristic marks in the lungs as rescribed, that the trouble would have stopped here? Certainly not; but, having become master of the situation, the germs would procede to the inevitable ending—death of the patient.

But if we consider the presence of the germ only as the result of the disease—merely a result of circumstances—how simple the explanation becomes; how easy to account for their presence. Those who understand the nature of these diseases understand that the danger is not from the germs present, but from the virulent poisons in the form of purulent matter and foul gases resulting from the tissue destroyed by disease.

Take another example; abscess of the liver. This disease is secondary in a more direct sense than the other diseases mentioned. Abscess of the liver usually results from a diseased digestive tract. The return circulation from the digestive tract is first carried direct to the liver, and when digestion is poor the cir-

culation also carries waste and poisonous matter, which is emptied directly into the liver, and the whole organ is poisoned. The digestion carried on by the liver is interfered with. The enormous amount of other work carried on by this organ is also interfered with. With a loss of liver-action intestinal digestion is interfered with, the digestive tract becomes more unhealthy, and in return more poisons are poured into the liver. The return circulation passing through the liver is diminished and oxydation of the blood in the lungs is correspondingly lessened. The enlarged liver, with its growing abscess, crowds upon the lungs and lessens the power of respiration; nutrition is lessened and the whole body suffers. These are conditions with which germs have nothing to do, absolutely nothing.

Abscess of the brain, although rare, is also secondary. First there is a diseased heart or diseased arteries from some cause. Both are of slow growth. (Abscess of the brain may result from accident.) In any case, the circulation becomes clogged, nutrition is shut off and some of the brain tissue dies; first one cell and then another; inflammation surrounds the dead area and prevents its spread—nature's method of localizing disease. Germs have had nothing to do with bringing about the long train of conditions that led up to the abscess. Thousands of times before germs may have circulated through this same brain, but now they lodge in the dead and dying tissue and reduce it to liquid form, according to a natural law.

Ulcer of the stomach is secondary, and is caused by a blood-clot or the obliteration of an artery, when the

parts supplied by such an artery die from lack of nourishment and degeneration follows. The stomach may become so unhealthy as to contain immense numbers of germs, yet the danger is not from the germs, but from perforation; i. e., the ulcer may "eat" through the stomach, or may destroy blood-vessels and cause dangerous or fatal hemorrhage. In none of the diseases named are germs a danger or injury.

Some may claim that when an abscess ruptures the bulk of the germs escape, and it is by reason of such relief that the system recovers. Exactly. Nature has made every provision for the system to localize disease and overcome germ action. The abscess is circumscribed until it reaches the surface, when rupture takes place and the system is relieved. If an abscess is so deep that it cannot reach the surface it is often absorbed; little by little it is taken up by the circulation, carried away, eliminated and recovery follows.

These cases not only show that germs do not cause disease, but they prove that the presence of germs in any considerable numbers is merely coincident with disease; i. e., a result of disease. As stated many times, they are everywhere present for the purpose of separating the elements of dead tissue, animal or vegetable, and giving such elements back to nature's laboratory. Whether death was the result of accident, old age or disease (abscess) makes no difference. When the work is finished the germs disappear.

Green's Pathology, although filled to overflowing with the various germ theories, states on page 370:

"How, too, should we otherwise explain the recovery of some people from phthisis except by assuming that the soil, which was at one time favorable to the growth of the bacillus became later on unfavorable?" Can any one select more convenient words to prove that germs are the result and not the cause of disease?

The author recently addressed a letter to a leading germ theorist, for many years professor in one of our leading university's medical department, asking the question: "In diseased conditions is it not true that germs are an advantage by reason of their power to reduce and liquify dead tissue and thus aid in relieving the system?" In reply this eminent doctor said: "Dead or diseased tissue can indeed be gotten rid of by fermentative and other changes induced by germs, but at an enormous expenditure of vital energy and tissue-cells." Again he says: "While the results following germ action do serve to get rid of dead or diseased tissue, they do so in a dangerous and wasteful manner." Again, "Dead tissue or dying tissue can be removed only by either putrefactive changes or by a combination with suppurative processes, if germs be present, yet no such combination obtains in the absence of germs."

Then he argues that, "Cancellous tissue and the medullary canal are hollowed out of solid bone." Also, "The means by which all tissue waste is removed during the constant physiological breaking down and building up of tissue." In this way the professor says:

"Extensive masses of dead tissue, osseous as well as

soft, are removed unconsciously in the absence of germs."

The trouble with the professor is, he is unable to distinguish between physiological and pathological conditions or changes. All will understand that germ action has nothing to do with the physiological or natural changes, repair and waste, constantly going on in a healthy system, as mentioned by the professor, but only applies to diseased conditions where waste is present in unusual amounts.

In maintaining life and health the different cells of the body are constantly taking up nourishment and giving off an equal amount of waste in the form of dead matter. This is nature's plan, and so long as health is maintained each cell in the body must do its part. Cells are not replaced all at once, but so gradual are worn-out particles cast off and replaced by new, that weeks and months are required to complete the change. In disease it is different, as a whole cell or a great number of them may die at one time. What is to be done? They cannot be eliminated whole, and the surrounding healthy cells are unable to go beyond their own borders. They have enough to do to take care of their own business, and especially since disease is present. It is in conditions like these that germs from the external world, finding their way into the system as they do constantly, float along in the circulation and lodge in the dead tissue, produce fermentation, and the dead tissue is broken up and eliminated.

The professor's teaching applied to health is correct; applied to disease and it becomes ridiculous at once.

Take the "extensive masses of dead tissue" destroyed by an ulcer, by an abscess, by a burn or by gangrene, where a hand or foot is destroyed in a few hours. Now apply the professor's words, "Extensive masses of dead tissue are removed unconsciously in the absence of germs."

Is that true? Did any one ever know of "extensive masses of dead tissue" sufficient to produce ulcer or abscess to be removed without the presence of germs? Did any one ever know of "extensive masses of dead tissue" in moist gangrene, or in any other disease, to be removed without the presence of germs? Why are germs present in such cases? Because it is nature's plan. They are needed to reduce dead tissue when occurring in any considrable amount.

Why are germs absent during the elimination of natural waste produced in health, as mentioned by the professor? Because this is nature's plan also. Here they are not needed. The waste is given off in the form of a watery vapor, and in such small quantities that it can be readily eliminated.

The foregoing is taken from a personal letter, and the doctor here referred to is still professor in one of our leading university's medical department, and is authority in bacteriology.

In the Review of Reviews of October, 1900, page 483, Mr. Maurice L. Johnson asks the question: "Are microbes pathogenic?" And proceeds to answer the question with an emphatic denial. He quotes a paper from that eminent authority, George B. Bantock, M. D., F. R. C., S. E., in March of last year, in which the doctor

presents facts to show that the modern doctrine of bacteriology is a gigantic mistake, and states that the various microbes play a beneficent role in the economy of nature.

As Doctor Bantock and other eminent authorities assure us the germs which have come to be regarded as the cause of the most virulent disease are constantly swarming in perfectly healthy people, and in their decrescense (diminishing) are frequently attended with unfavorable results, there is good grounds for believing them to be necessary and beneficent.

Even that great germ theorist, Doctor Osler, says: "It should be strongly emphasised that those bacteria which cause disease are only a few species, all other contributing to our welfare in countless ways." "Only a few species cause disease?" Yes. Why does Doctor Osler say this, simply because he is only able to find a few species in diseased tissue, for, as stated on page 48, such tissue supplies nourishment for a few species only. Strange this brilliant man cannot see that these "few species" are the result and not the cause of disease. Doctor Osler admits that the so called pneumonia germ is present in twenty per cent of healthy people.

Kijanitzin claims that animals placed in sterile air emaciate and die in a few days. That in breathing ordinary air the germs inhaled yield their ferments to the action of the tissues of the body, and these ferments are necessary to promote oxygenation. If the microbe's supply is shut off the ferments disappear from the blood, and death ensues.

This would indicate that the scheme of creation is not so imperfect after all, and that the chain of mutual interdependence that links together animal and vegetable, rock and plant, extends also to the germ world, and that the microbe is essential to the life of the higher form of animals.

Bacteriologists have omitted to tell us about digestion, elimination and exercise, or about fresh air, pure water and sunshine. They forget to tell us that bad habits may again produce the same disease, that alcohol destroys about 100,000 lives every year, and that tobacco produces many fatal maladies, yet they prove their loyalty by antitoxins and animal extracts manufactured by themselves. These are but the revival of those principles and that commercial enterprise which a few years ago gave us Berckley's Panacea, the hydrogen sulphide cure for consumption; Brown-Sequard's Elixir of Life; Radam's Microbe Killer; Koch's Tuberculin, etc.; all failures, yet at one time each of these created its furore and later was stored away in the obsolete archives illustrative of the credulity of the profession.

These remedies, long since proven worthless, are now replaced by antitoxins. What are antitoxins? Bacteriologists claim that germs are the cause of disease. The germs first produce a poison in the system and disease follows. They claim that antitoxin when injected into the body of the patient neutralizes the poison, destroys the germs and the patient recovers. Antitoxins are prepared as follows: The germs, or their waste products (ptomains), are injected in to the body

of a horse or some other animal. The bacteriologists claim this excites a counter-poison, and the blood becoming charged with this counter-poison is drawn from some of the animal's veins, and when injected into the body of a human being having a disease produced by this particular germ, it will destroy the germ and effect a cure. This is called serum therapy.

For years leading medical journals and prominent physicians have claimed, and bacteriologists acknowledge, that carbolic acid or other antiseptics are used to prevent the decomposition of antitoxins; hence it is claimed that any virtues which antitoxins possess are due solely to the carbolic acid.

A recent editorial in a leading medical journal says: "If carbolic acid alone will do all that is claimed for antitoxin, and the serum alone is inert if not poisonous, where is the sense in using an expensive humbug? Why make the patient pay fancy prices for a myth? Why involve medicine in the obscurity of superstition again? Why support and give countenance to a fraud? Is or is not this quackery, even though it sit in high places?"

Instinct teaches us that nature did not place in the secretions of the lower animals the elements necessary for the preservation of human life. Antitoxins and the germ theory will run a natural course and die a natural death, like other fads and delusions.

There is one disease especially which bacteriologists claim to cure with antitoxin, and that disease is diphtheria; yet the fact that antitoxin statistics for diph-

theria are based on cases diagnosed by the microscope, destroys their value as evidence, for to-day every physician understands that repeated and painstaking examinations have proven the absence of the germ in some of the most virulent cases of diphtheria, and again it may be present for weeks at a time in the mouths and throats of healthy children. The presence of the germ depends upon the vitality and nutrition of the throat structures, and the amount and character of the exudations. A severe case of diphtheria with a well organized membrane, with dry and swollen surrounding structures, would present a poor medium for the development of germs, and in such cases germs may be absent.

A bacteriologist may examine fifty children, and by the aid of the microscope he may find the so called diphtheria germ present in the throats of one-half the number. He immediately reports twenty-five cases of diphtheria, uses his antitoxin and again reports a cure in each case, when the facts are, there may not have been a single case of diphtheria among those reported. Bacteriologists know this to be true.

In the Review of Reviews for October, 1900, Dr. Bantock states (page 483): "The misconceptions in regard to germs seem to have arisen from the mistaking of an effect for a cause. For example the diphtheria germ has been looked upon as the cause of diphtheria, while it is universally admitted that it is continually present in perfectly healthy mouths and throats. But, of course, when an individual contracts diphtheria all the microbes which are swarming in his

system, including this denizen of the throat, must participate in the contamination and acquire the diphtheritic diathesis, so when under such conditions, it has been taken and injected into animals and they have developed the diphtheria, the false assumption has arisen that this microbe, harmless enough when taken from a healthy person, was the cause of diphtheria, because it induced the disease when taken from a diphtheritic patient, any other microbe or emanation from whom would have possessed the same diseased property."

Dr. Bantock says in substance that germs are present in every healthy system, and that if taken from a healthy system they will not produce disease, but after having been in contact with diseased tissue they may carry disease the same as any other substance, the same as a bandage or towel that has been in contact with a diseased part. Dr. Bantock says germs are both "necessary and a benefit."

Regarding antitoxin for diphtheria, it is important to remember that diphtheria is a self-limited disease, a disease of short duration, and under favorable hygienic surroundings and good general management usually terminates favorably, otherwise the life of antitoxin for diphtheria would have been as short as the tuberculin of Koch.

As stated, in the recent past, bacteriologists have manufactured and used antitoxins for many diseases, but they have proved such utter failures that of late we hear little of them except antitoxin for diphtheria as just mentioned. The others have faded from view

until even the most enthusiastic bacteriologist is ashamed to speak of them. Antitoxins for diphtheria will meet the same fate.

The author recently addressed four letters to four leading centers of information, asking for evidence showing that antitoxin without carbolic acid or other antiseptic; i. e., the animal serum, in and of itself has any power to cure disease. Three of the offices addressed were prominent germ theorists. This gives them the advantage.

The first answer given is from a leading germ theorist and professor of bacteriology in two leading medical colleges, dividing his time between the two schools. He says: "Do not allow yourself to get crosswise on the diphtheria antitoxin question. The serum is curative beyond a doubt. The opposition is limited to the most ignorant homeopaths."

Does that prove anything in favor of antitoxin?

No.

Does it prove anything else?

No.

The second answer is from a prominent firm of manufacturing chemists, and also leading germ theorists. This firm stands very high in the scientific mind. They say: "It is our opinion that the addition of antiseptics to antitoxin is not absolutely necessary. It has been demonstrated that serum in itself has curative powers, in regard to which we would refer you to the works of Crookshank of England, and Metschnikoff of Paris." This is the same Metschnikoff who gave us the "theory" of the white blood-corpuscles.

Then this firm advises the use of certain preparations manufactured by themselves, as being far superior to antitoxin, and closed by saying: "Physicians all over the United States advocate the usage of our products in preference to antitoxin."

Does this second answer prove anything for antitoxin?

No. On the other hand it is practically an admission that antitoxin is without value.

They say: "It is our opinion," so-and-so, and then discard antitoxin for goods manufactured by themselves. The two answers just quoted are from personal letters.

The third answer is also from a leading firm of manufacturing chemists. Perhaps this firm stands highest in authority—Merck & Co. of New York. Their answer appeared in Merck's Archives for July, 1900, page 80, as follows:

"The reports of the first experiments performed with antitoxin indicated that the experimenters used perfectly pure and antiseptic-free antitoxin. It was only when they were compelled to keep it that antiseptics were used, and then they had to determine if the antiseptic would destroy its curative properties. On finding that it would not they were able to send it out as a commercial article. A study of the results of the use of antitoxin, as shown by various articles that have from time to time appeared in the Archives, will show Dr. W. that no such effects could in any degree be accounted for by the use of creosote, carbolic acid or other such remedy."

Does this third answer prove anything favorable for antitoxin?

No.

What does it prove?

Nothing. It is only a statement from those who have faith in the remedy. They do not say that disease was ever cured or even influenced by antitoxin, and state that the first experiments only "indicated" so-and-so.

Who were the experimenters?

Germ theorists, of course, the same men who explained (?) immunity on page 31.

The fourth answer was by a personal letter, as follows: "We are pretty familiar with antitoxin literature, pro and con, and we do not believe antitoxin serum alone has ever been used. In fact, it would be dangerous to do so, for it begins to undergo changes immediately, the carbolic acid or other antiseptic is incorporated during the process of manufacture. Nothing has ever been found in the antitoxin except the antiseptics. Antitoxin is simply a combination of horse-serum, carbolic acid and faith. Carbolic acid has an old and flattering history in the successful treatment of diphtheria, scarlet fever, typhoid fever and other infectious diseases. Especially is it useful in the small doses as employed in antitoxin. The evidence which antitoxin has accumulated for itself has been manufactured by carbolic acid. The serum alone has nothing back of it except theory, assertion and credulity."

The center from which this authority emanates is

second, perhaps, to none, and is undoubtedly true. They state that carbolic acid or other antiseptics are incorporated during the process of manufacture, and this destroys that part of Merck's reply in which they state that antitoxin serum was ever used alone.

In the *Medical Visitor* for March, 1900, page 143, is the following article from the *Wisconsin Medical Recorder*, showing the folly of mortality statistics for diphtheria as furnished by the bacteriologists, who claimed such a high death-rate before antitoxin was used:

"Those cities which now have a low general death-rate from all causes also show, as would be expected, a low diphtheria death-rate. This is true of Chicago and Milwaukee. New York City, which at present has a very low general death-rate compared with many years in the past, naturally has a corresponding low diphtheria mortality.

"It is a common assumption that the mortality from diphtheria used to be 40 per cent before antitoxin times, which is as absurd as it is untrue. Certainly at times 40 per cent of the patients died. The mortality was very much higher than 40 per cent in some epidemics. Ferrand in 1827 related that in an epidemic all of the 60 patients died. Bretonneau in 1826 quoted Carnevale as saying that in Chiaja near Naples the greater part of those attacked succumbed. Ozonam's summing up of 39 epidemics from 1559 to 1805 showed 80 per cent mortality. Then the tables of epidemics from 1805 to 1830, made by the *Academie Royale de Medicine*, gives the death-rate as 25 per cent. But

Beauquin in 1828 lost only 4.6 of 300 cases. Roll in 1850 said that in Drontheim, Norway, of some 700 cases only about 7 per cent died. Lespeau in 1854 wrote that in one regiment of 200 cases only 6 per cent were lost. And Mackinder reported in 1859 a death-rate of only 0.25 per cent in 400 cases in Gainsborough, England. Were this great disparity in the diphtheria death-rate before antitoxin times kept in mind, perhaps we would not so often be treated to the amusing argument that because the death-rate has declined a few degrees in some places since antitoxin has been introduced, therefore antitoxin is responsible for the improvement.

"How can a thing be considered a specific which gives 11.8 per cent mortality in the Berlin Kaiser und Kaiserin Friedrich Kinderkrankenhaus, and at the same time allows a mortality of 23 per cent in the Philadelphia Municipal Hospital, being more than double the mortality in one institution than in the other? Quinine would not be called a specific if it could not cure intermittent fever as well in Chicago as it does in St. Petersburgh or any other city. Until antitoxin brings down the diphtheria death-rate to a point lower than it ever was before, and keeps it at that point, in every place, it must be considered a failure.

"Within the writer's knowledge diphtheria occurred in the families of four physicians in this city. Of the patients two received antitoxin and promptly died. The other two were not treated with antitoxin and recovered. It is fair to assume that the antitoxin-

treated cases, being in doctors' families, were not neglected and that the treatment was begun early in the disease.

"There is no convincing evidence that antitoxin exerts any influence on the false membrane in causing its early detachment or disappearance, or in preventing it from spreading. Even if it did, it would not signify much, for the membrane is simply the effect of something, it is not the disease. Patients often die after the membrane has disappeared. The diphtheritic lesion is identical anatomically with croupous inflammation due to traumatic and other causes. Back of the formation of the false membrane is that deranged condition of the system permitting the growth of pernicious bacteria, which abnormal state is really the disease. We do not know but what the formation of the false membrane is nature's method of protecting the patient, and until it shuts off the air from the lungs the membrane may serve some useful purpose. Rupp couldn't see any effect on the membrane in his twenty-four antitoxin-healed cases, in such a way as to be beyond doubt.

"It is a common thing, in cases not treated with antitoxin, for the membrane to begin to fall off after the first day, to disappear completely in three of four days. Rupp needed to visit two cases which were not treated with antitoxin only four days, and one, a croupal case, only three days. The diagnosis in each case was confirmed by bacteriological examination. Bretonneau in his classical work on diphtheria dis-

tinctly taught: 'You will remark that at the first day of the appearance a radical cure may be obtained in forty-eight hours.' Yet antitoxin advocates claim everything, because in some cases treated with antitoxin the false membrane begins to disappear, as they say, early; in two or three days (Wiemer), or three or four days (Baginsky). This also happens earlier and later. In fact, with antitoxin it is often very much later. Chapin speaks of seven-year old patients receiving 4,500 units on the third day, with the result that the throat cleared only after six days, and later the membrane partly reformed. Winters saw it remain ten days in two cases, and in another at the end of the twenty-second day it was still present.

"It is conceded that eruptions are often caused by the injection of antitoxin. Engelman and Morse describe cases of urticaria. Myer saw urticarial rash in one case, and a macular eruption in another. Berg, in summing up his observations, concludes: 'In very many cases the eruption, if at all general, is at least a discomfort.' In others a decided increase in the gravity of the disease accompanies the appearance of the eruption, which is present in at least ten per cent of cases treated with antitoxin. Martin and Hunt saw the eruption in 27.5 per cent of 178 antitoxin-treated cases. The London Asylums' Hospital Report for 1896 says the eruption appeared in 35.2 per cent of the cases treated with antitoxin.

"Joint troubles also follow the use of antitoxin. Lombard had one case in which there was pain in the

joints. Fleisch describes a case in which swelling of the hip-joint occurred. Perregeaux mentions thirty cases of joint-trouble following the use of antitoxin.

"Before antitoxin was used in the Willard Parker Hospital 16 per cent of the fatal cases died of pneumonia. During nine months of 1895, 53 per cent of the deaths were caused by this disease. Winters thought the enormous increase of pneumonia has no other explanation than the hypodermic injection of serum (antitoxin).

"Finally we have the startling fact that the injection of antitoxin for the purpose of immunization has killed many people. Korach and Alfoldi, and many others, have reported deaths following prophylactic doses of antitoxin."

In 1895 Dr. Cordeiro concluded his report on diphtheria antitoxin to the surgeon-general of the navy in these words:

"As yet we have not the slightest basis on which to found an expectation that fewer children will die in the future of this disease on account of the serum treatment, and every year adds fresh testimony confirming the justness of this decision.

"And from all the bad effects caused by the use of antitoxin it follows that many lives have been sacrificed which might have been saved with the usual time-honored remedies."

Will antitoxin cure diphtheria?

Here we learn that it requires many years to form an estimate of the number of deaths from contagious diseases. And even without the foregoing history

every practical mind will recognize at once the importance of such time. Yet in spite of such necessary evidence some of our State Boards of Health, in their haste to rush into print and thus keep their names prominently before the public, stated in a recently published bulletin, "That nearly all the contagious diseases prevalent in their state show a marked decrease during the quarter just ended in comparison with the first three months of the present year," etc., etc. Comment is unnecessary, except to remind the reader that the bulletin issued by the board was paid for out of the public money.

If it were true that germs cause disease, could any one prepare an antitoxin intelligently or successfully until after the germ had been discovered and the nature of its poison understood? No; no more than a doctor could treat any other case of poisoning without first knowing the kind of poison taken.

Have we had an antitoxin for yellow fever? Yes.

Has a germ ever been discovered that will cause this disease? No. A few years ago Sanarelli, an Italian, claimed to have discovered such a germ, and at the time enthusiastic believers accepted the statements as true. To-day bacteriologists themselves admit they have no germ that will cause yellow fever. To prove this it is only necessary to state that a few years ago the bacteriologists instituted the most strict quarantine regulations in every case of yellow fever, to-day all quarantine regulations are abandoned.

Then we have an antitoxin for the destruction of a certain germ before such germ is discovered? Yes.

Take the so called diphtheria germ, and the barrels of antitoxin that have been manufactured to destroy this germ and its poison. It now develops that bacteriologists themselves are in doubt as to having discovered the guilty bug. Inquiry among them will convince the reader that for several years they have been disputing among themselves, some claiming that the germ first decided upon is the cause of diphtheria, and others claiming other germs. Some claim that it requires a mixture of these germs. Admitting for the moment that germs cause diphtheria, the bacteriologists could not tell to-day what germ produces the disease. Here again we have an antitoxin for the destruction of a germ or its poison before such germ or poison is discovered? Yes.

Again, bacteriologists themselves admit there are many cases of diphtheria when no germ can be found.

Bubonic Plague.

While bacteriologists claim this disease is caused by a germ, it is well known there is no germ that will produce such a disease, yet the modern bacteriologists have prepared and used an antitoxin which they inject into the system to cure the black shadow of the east, as the plague is sometimes called.

It is well known there is no germ that will cause hydrophobia. Green's Pathology, page 311, says: "No hydrophobia organism has yet been discovered." And we have an antitoxin for the destruction of such a germ? Yes, Pasteur, a Frenchman, established such a treatment several years ago.

Again, the bacteriologists admit they have no germ that will cause cholera, page 341, Green's Pathology states, "that during an epidemic of cholera the drinking water of Versailles contained the cholera vibros, yet those who drank the water remained unaffected," and "that the organism persisted in the water for months after the epidemic had ceased, and therefore the appearance of the microbe in the water did not necessarily involve the appearance of an epidemic."

All must admit that antitoxins cannot be intelligently or successfully prepared without first knowing the nature of the germs or poison against which they are to be used. Then why do we have so many, and why do we have them before the discovery of the germs for which the various antitoxins are prepared? The *National Medical Review* for May, 1900, page 620, contains an article in which antitoxin is mentioned. The article states that a tube containing 1 c. c., or about 15 drops, sells for $1.00, and a vial containing 10 c. c., or about 150 drops, sells for $7.50. Fifteen drops of blood-serum from a dumb brute $1.00, 150 drops of blood-serum from a dumb brute $7.50! Antitoxin for diphtheria costs about $3.00 for each dose. Merck & Co. speak of antitoxin as a commercial article. That was a happy thought for the manufacturers. Why do we have antitoxins first? Why—that is—well, perhaps the bacteriologists themselves would rather answer that question.

The Health Boards of New York City and Philadelphia speak of the germs of scarlet fever and of measles as a matter of course, and for years bacteri-

ologists have taught the public, including school children, that all infectious diseases are caused by germs. Are they? Have they ever found a germ that will cause—

Scarlet fever? No.
Measles? No.
Yellow fever? No.
Cholera? No.
Pneumonia? No.
Bubonic plague? No.
Typhoid fever? No. (See typhoid fever.)
Smallpox? No.
Cancer? No.
Whooping-cough? No.
Chicken-pox? No.
Hydrophobia? No.
Influenza (grip)? No.
Diphtheria? No. Bacteriologists do not agree.

Even Prof. Osler is quoted as saying: "Strange as it may seem, the most typical of all infectious diseases, smallpox, scarlet fever, hydrophobia, etc., have as yet not yielded up their secrets."

For years bacteriologists have been teaching the public, including the school children, that all contagious diseases are caused by germs? Yes, and at the same time they admit they cannot find any germs that will produce the diseases? Exactly; every bacteriologist knows this to be true.

Have they ever found a germ that would ever cause a disease of the heart, brain, liver or kidneys? No. Many people suppose that germs have been found that

will produce each of the diseases just named, but this is not true. It is true, however, that at one time bacteriologists found certain germs which they claimed would produce some of the diseases, but not all; and as already stated, they themselves proved by later developments that they were mistaken. In order to show the remarkable efforts which they put forth to prove the presence of the germ, permit the author to quote briefly from the Washington Star of June 18, 1900: The question of hydrophobia was discussed, and the statement was made that the disease was "Almost certainly caused by a living germ" (Ahem).

But let us admit for a moment that hydrophobia is caused by a germ. Bacteriologists teach that all germ diseases are contagious. Is hydrophobia contagious?

Good Lord deliver us from the trials, perplexities and tribulations of a germ doctor.

If acute diseases are caused by germs as claimed, and an antitoxin prepared from the diphtheria germ as described, will cure diphtheria, then we must believe that antitoxins prepared in like manner from each variety of germs which they claim cause other diseases will also cure, as already stated. Yet everyone understands that antitoxin will not cure any of the diseases just mentioned.

Will antitoxin cure—

Pneumonia? No.

Typhoid fever? No.

Tetanus or lockjaw? No.

Smallpox? No.

Hydrophobia? No.

Yellow fever? No.

Cholera? No.

Scarlet fever? No.

Measles? No.

Influenza? No.

Diphtheria? No. (See antitoxin for diphtheria.)

Bubonic plague? No. Neither will it cure any other disease.

Health boards know these statements are true, yet they continue to send out their delusive advertisements concerning antitoxins, and incidentally, of course, they advertise themselves at the same time.

The true doctor thinks of his laborious duties, his constant study over perplexing medical problems, his gradually acquired knowledge of drugs, of symptoms and of the laws of health; then he looks at a vial of antitoxin, he reads the outrageous price asked for the humbug, he hears the imbecile scientific prattle which supports its claims, he thinks of giving a patient poisoned serum depraved by the septic processes going on in the animal from which it was obtained, then he laughs long and softly as he thinks: "What fools we mortals be!"

For years germ theorists have taught that milk, used as food, has been a more or less common source for the spread of tuberculosis, or consumption. In fact, so widespread has a belief in this teaching become that many states have enacted laws resulting in the destruction of vast numbers of cattle, supposed to have been infected with the so called consumptive germ; but we now learn that the evidence upon which

this wholesale destruction has been carried on is merely a supposition, like other germ theories.

Page 157 of the *Medical Visitor* for March, 1900, contains the following article taken from the *Medical Standard:* "An Article on the Subject of Bovine Tuberculosis (consumption in cattle), written by Dr. Edward Moore, the well known veterinarian of Albany, N. Y., has appeared in the *New York Medical Journal.* An experience with thousands of cases of bovine tuberculosis has qualified him to speak with a certain degree of authority. Dr. Moore quotes the bacteriological evidence of Dr. Theobald Smith, of the United States Agricultural Department, Washington, D. C., showing that the so called consumptive germ found in man and that found in cattle are entirely different. As a further proof of his position Dr. Moore finds an abundance of clinical evidence in the every-day lives of people who are constantly exposed to the infection from bovine tuberculosis. It is self-evident that if transmission is possible, the farms where large numbers of infected cattle are kept are places where the fact can be best observed, because nowhere else in the world is there so much infected material; nowhere else are the bacilli so potent; nowhere else are people so exposed to the danger, if any exists, and at these places, feeding and inhalation experiments, so to speak, are constantly going on, and yet personal acquaintance with the lives of hundreds of people exposed to every-day infection with these germs, and extensive inquiry, have failed to reveal a single case of tuberculosis contracted in this manner."

"Evidence of a similar character is given by Prof. Adams in an address delivered at the meeting of the Canadian Medical Association."

The presence or absence of germs signifies but little except to the bacteriologist, to whom germs are the chief source of power. They are sounding the notes of alarm to call the attention of the dear people to this new danger, and save them from the horrible fate of the streptococcus; and strange enough, each of these sentinels, these sympathizers, is ready to prove his sincerity by offering a means of escape in the form of an antitoxin, prepared from dumb brutes. These antitoxins are manufactured by the bacteriologists themselves, who offer them for sale at a price that would cause the Standard Oil Company to blush with shame. Their real value can be expressed by the figure 0.

For years, the more advanced(?) bacteriologists have been brooding in the laboratories over test tubes and microscopes, working with the various liquid mediums, raising little bugs, and by injecting them into animals they have been trying to disclose the mysteries of disease. By this means they have daily arrived at new and more important conclusions. These conclusions have emanated from the sacred incubators, which were presided over by the professors themselves. Many of these incubators are in Germany, and the others ought to be. These discoveries would be of vastly more benefit if kept secret within the walls of the renowned institutions in which they were born. Bacteriologists publish sensational accounts of the dire evils which would happen to the people if it were not for their deep study

and watchful care. When we read the glowing accounts of these life preservers we feel that "life, liberty and the pursuit of happiness" are little enough to give in return. But, alas, after the bacteriologists have reached the topmost wave of prosperity, it is discovered that germs are not at all diagnostic of disease, for today it is well known that any germ that ever twisted or wriggled may inhabit the human body without producing sickness.

Since bacteriology is supported largely by State Boards of Health, and as these health boards have almost unlimited control of all infectious disease, reference to this organization may not be out of place. First, let us notice their system of advertising. The following is from the regular published statements of the board itself. To a recent inquiry sent to one of our State Boards, asking the means used to warn the people of the presence of a certain disease, the secretary replied in the *Grand Ledge Michigan Independent*, under date of October 19, 1900, as follows:

"The means used to warn the people are numerous, and the state pays for such sanitary work. Every case of disease dangerous to the public health must be reported to the secretary of the State Board. The secretary sends a package of leaflets and requests their distribution among the neighbors of the premises placarded. These leaflets warn the neighbors of a dangerous communicable disease," etc. In the same article the secretary states: "Some of the means used by the office of the State Board of Health to warn the people are regular bulletins issued weekly and monthly, and

sent to editors of newspapers and others; by special hektograph items sent from time to time to newspapers throughout the state; letters, telegrams, telephone messages, etc." According to this, State Boards of Health are permitted to use, free of charge, every known means for conveying thought or speech.

Is this the reason the public hear so much about germs and germ diseases, and is it the reason people become so frightened whenever a contagious disease enters a community?

"These leaflets—advertising sheets—warn the neighbors of a dangerous communicable disease."

Does not such wholesale advertising create a sense of fear and dread wherever disease enters a community, and in many cases lower individual resistance and thus render disease more dangerous and fatal?

A belief that one is surrounded by germs from which there are no means of escape, and which are liable to bring sickness and death renders the individual more or less helpless and demoralized, and aids materially in the spread of disease, and in many cases may be responsible for a fatal termination.

In the March, 1900, number of *Physician and Surgeon* is the following: "When some months ago the report of the terrible deaths of several physicians in Vienna went through the whole civilized world—deaths said to be caused by an infection with the pest bacillus, the most deadly microbe yet discovered—the question was freely discussed whether such dangerous experiments should be carried on in the laboratory and hospitals,

and whether such experiments were not too reckless undertakings, overrating human control over nature's forces. Vienna and the whole Austrian empire became panic-stricken. The impending danger of a murderous epidemic was thought of, the principals of the laboratories were severly criticized, and an excited populace threatened to mob them. The power of the most minute organisms was brought to light, the manifestation of their force was terrible, the sufferings and misery which they created in the limited circle where they were handled convinced even the most pronounced skeptic that bacteriology has not to deal with hypothetical questions, but with living factors."

Why were the people of Vienna excited and "panic-stricken?" Because of the teachings of the bacteriologists.

What became of this "murderous epidemic" that was about to break forth and produce such "terrible suffering"? Why, about that time the bacteriologists turned their attention to something else and the people forgot all about it.

Does this not prove what we claim, viz.: That the mythical teachings of bacteriology are the very best means of producing a panic in any community or country? And is it not also true that, while laboring under this condition of excitement the powers of resistance are lowered and people more liable to contract the disease? And the disease more liable to prove fatal? It is assumed that when any of the boards of health wish to secure the passage of a new

law, they exert a little of the "Vienna influence" upon a body of "panic-stricken" legislatures and success is assured.

Instead of advertising senseless panics, the individual physician should be allowed to show the true cause of disease, teach the influence of climatic and atmospheric conditions, the great benefits of cleanliness, temperance, regularity, diversion, contentment, etc. In a word, the ordinary laws of health. This would not only aid in rendering disease less prevalent, but would also aid in supporting the patient when disease is present.

State Boards of Health claim that it is through their efforts that disease is becoming less. The secretary just quoted says, "And the statistics collected and published by the Secretary of State show that the death-rate has been less," etc.

Who collects all statistics, makes all estimates, draws all conclusions and gives all credit to the board of health? Why the members of the board itself. And there is none to examine the verdict? None. There is only one side to the question presented? Only one.

Quoting again from the above article the secretary says: "The introduction of sewerage and general water supply has been followed by the reduction of disease." "In those cities where there are sewers and a general water supply the death rate is very much less than in those cities without sewerage and general water supply."

Exactly; and this sewerage and other sanitary science which mark the progress of our modern cities would

have been the same if bacteriological health boards had never been thought of. In this respect a company of business men could accomplish all that bacteriologists have ever accomplished and comparatively would cost nothing.

The many "new discoveries" which bacteriologists and the various health boards claim to make remind us of the horse presented to the young minister by his congregation. The young man's father came to see him, and going out to see the horse, exclaimed: "Couldn't your congregation give you a better horse than that?" "That is a better animal than our Saviour rode to Jerusalem," replied the young man, opening the animal's mouth to examine his teeth, the old gentleman exclaimed: "I believe it's the same one!"

Health boards have many of their "new discoveries" written up by the editor of some newspaper, or they may appear in pamphlet form, as did the following, which was issued by the Michigan State Board of Health for February, 1900:

A doctor living in Detroit is asking how to check an epidemic of measles, and wishes some advice from the Attorney General. Following is the Attorney General's reply, though not given in full. The reply introduces a new and novel feature in advertising, which is worthy the consideration of all who depend upon printers' ink arrayed in many colors, with flashy headlines:

"State of Michigan, Attorney General's Office,
"Lansing, January 29, 1897.

"Samuel P. Duffield, M. D., health officer of the City of Detroit:

"My Dear Sir—Yours of Jan. 21, directed to Dr. Baker" (secretary State Board of Health), "in which you ask him to submit to me a hypothetical question, as to what course should be adopted by you in your efforts to suppress the epidemic of measles, which I understand is now prevailing in your city, has been duly considered," etc., etc.

"The highest medical authority which I recognize in this state on such subjects is the Michigan State Board of Health," etc. In a pamphlet, "A Quarter Century of Public Health Work in Michigan," page 20, we understand the health board itself claims to be "The highest authority" on "What are the dangerous communicable diseases."

What could the Attorney General be expected to know about "suppressing an epidemic of measles?"

Why did Dr. Duffield submit this question to the Attorney General? Judging from recent developments regarding the "immortal nineteen" it would seem as though the Attorney General of Michigan would have enough to do to attend to the duties of his office, but then he may have possessed the same commendable spirit as did the old lady, and the health board knowing this in advance were sure of a favorable answer, and all will agree that when the Attorney General attempts to "suppress an epidemic of measles" in Detroit or anywhere else the proceedings ought to be published.

The old lady referred to always had a good word for everybody, and a bet was made that she could be induced to condemn the acts of some one. The devil was chosen as the one against whom the old lady, it

was supposed, would cast unfavorable remarks. After a brief mention of the wickedness going on in the world, and incidentally stating that the devil was the cause of it all, the old lady was asked what she thought of the evil one. The reply was prompt: "I think his persistency is truly commendable."

If we wished to prosecute a criminal we would seek support from the Attorney General. If we wished to advertise ourselves we would seek aid from some gentleman who, like the editor of the *Laramie City Boomerang*, won the public heart and later held first place as writer and humorist. Of course all are acquainted with Mr. Nye as a writer, and the following is given here simply to call attention to his ability to write advertisements. Having a cow for sale, Mr. Nye wrote a notice similar to the following:

"Owing to ill health I will sell at my residence one plush raspberry-colored cow. She is a good milkster, and is not afraid of the cars or anything else. She is of undulated courage and gives milk frequently. To one who does not fear death in any form she would be a great boon. She is much attached to her home at present, by means of a stay-chain. She is one-quarter shorthorn and three-quarters hyena. I will throw in a double-barrel shotgun and a second-hand tombstone. I would prefer to sell her to a non-resident."

We do not wish to be understood as advising health boards how to advertise, for we understand they are already proficient in that respect, in fact it is their proficiency that suggested Mr. Nye's name.

Briefly noted, another evidence of their proficiency

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is found in the following: "A Quarter Century of Public Health Work in Michigan," issued in July, 1898, by the State Board of Health, Chief Clerk states, on page 23: "In the report for 1897 will be found such a study that estimates that 149,296 cases of sickness and 7,121 deaths have been saved during the seven years, 1890-'96," etc., etc.

Page 24 states, "The money values saved to the taxpayers in Michigan through the work of the state and local health officials is enormous.

"As stated in the preceeding head, during the seven years, 1890-'96, it is probable that there were saved 149,296 cases of sickness and 7,121 deaths from diphtheria, scarlet fever, typhoid fever and measles—four infectious and preventable diseases."

In its annual report for 1897 the State Board of Health estimates that the total money value saved the people of Michigan is $6,973,680, or a little less than one million dollars per year.

"In these estimates it is believed that each life saved represents at least $500 less than the price of a slave during war times, and each case of sickness avoided represents a saving of at least $40 for funeral expenses, etc." Some of the above quotation is under the heading, "Life Saving in Michigan."

The reader is cautioned not to read the title, "Life Saving Machine." The words are similar, but the manner of operating is altogether different. Machines are generally operated by steam, while health boards are operated by theory.

"One hundred and forty-nine thousand two hundred

and ninety-six cases of sickness and seven thousand one hundred and twenty-one deaths have been saved" in seven years. Who says so? Why, the health officers. How do they know? They "studied and estimated," and then by placing the value of a human life at $500, these same health officers tell us that they are saving the state nearly one million dollars a year. It will be seen that by shifting the studies, changing the "estimate" and increasing or diminishing the value of human life, the profits may be correspondingly increased or diminished.

The Michigan Health Board only claims to save the state one million dollars on four diseases. We are acquainted with a health officer from another state who claims they save three million dollars on one disease. The difference is all in the "estimate" and the value placed on human life as mentioned.

The health board claims that diphtheria and scarlet fever are "preventable diseases." To the writer's knowledge scarlet fever has been epidemic in a certain part of Michigan during the past three years, yet every case was under the control of a health officer. Why did not the health officers stop it?

Diphtheria was epidemic in Lansing, Michigan for many months during the year 1900. The health board had full control; why did they not stop it? Why did they allow it to "run its course," which it certainly did? The writer has heard it freely stated that about the year 1898 typhoid fever was notoriously prevalent and fatal in Philadelphia. Why did not the health board stop it? Is this the way the board of health "prevents sickness

and death?" They claim their "saving to the taxpayer is enormous," and prove this by "studies, probabilities and estimates." Why this uncertainty? Because they are dealing in theory.

Anything which health boards can do to establish and maintain cleanliness should be encouraged; that is the only thing they ever have or ever can do to prevent sickness or cure disease, and as stated elsewhere a company of business men could accomplish just as much in this direction and comparatively would cost nothing.

In the foregoing quotation the health board states that "each case of sickness avoided represents a saving of at least $40 for funeral expenses." According to this, every disease treated by the health board ends fatally, for if every case "avoided represents a saving of $40 funeral expenses," then every case where disease develops must end fatally. In this case the health board is to be congratulated for its honesty, for we are not acquainted with any other class of physicians who are willing to admit of so large a percentage of failures.

Let us see what others think of health boards. In the discussion of a medical question in Detroit recently, as reported on page 570, *Physician and Surgeon* for October, 1899, a prominent doctor said: "I certainly believe that the state of our society at the present time does not warrant any such measures as are being taken by the State Board of Health to-day. I do not think that the profession, as a whole, in this state will back up the State Board of Health in this connection, and

one of the difficulties is that the man who has charge of the board of health in this state is a man who has never practised medicine. He is a man who gets all the knowledge he has on the subject from a study of theoretical books. His knowledge is the knowledge of the laboratory and not of the practical."

Can men who spend much of their time in laboratories inoculating and experimenting upon the lower animals understand much about disease, or appreciate the needs of the sick? The *Physician and Surgeon* for February, 1900, contains an article in which is stated, page 85: "Paralysis has been assigned as the disease causing death in seventy cases in Detroit during the year, from July, '98, to June, '99, according to the Annual Report of the Board of Health just issued. People die of paralysis, convulsions and dropsy in Philadelphia, New York and in cultured Boston, according to the death record from these and other cities. Yet these are not diseases, they are only symptoms which point to disease. Paralysis bears the same relation to disease in the nervous system, that cough does to disease in the lungs, but health boards accept it as disease itself, and accept symptoms as the cause of death." Are health boards "the highest medical authority?"

A pamphlet just issued by the Michigan State Board of Health says regarding disinfection: "For a room ten feet square three pounds of sulphur should be used; for larger rooms proportionately increased amounts." According to bacteriology disinfection means to remove from or destroy certain germs which they claim are the

cause of disease. After a room has been used by one having a so called infectious disease, they order the room closed and fumigated with sulphur. Sulphur fumes cause a grimy deposit over the walls, furniture and other articles with which they come in contact; leave a disagreeable odor for days or weeks, and often cause an irritating and disagreeable cough among those occupying apartments in which sulphur has been burned.

If it were true that germs cause disease, the burning of sulphur would do no good, for sulphur fumes will not destroy germs. Merck & Co. are among those highest in authority. Regarding the effect of sulphur fumes upon germs the April number of *Merck's Archives*, page 159, states: "Such fumes have no effect upon dry spores and can only affect such germs as are in a moist condition." It is needless to add that a dry room contains no germs in a moist condition, and that the fumes of sulphur are utterly worthless.

Personal letters from other authorities contain these words: "Fumes of sulphur as ordinarily used in a dry room will not destroy germs." Every chemist in the land understands that germs are not affected by sulphur fumes. The foregoing is mentioned simply to show the value in a community of bacteriology and its theories.

If the air, walls, ceilings, floors, carpets, furniture and other contents of a room are wet with water or steam, and then exposed to the fumes of burning sulphur, many innocent germs might be de-

stroyed. Everything else in the room would be destroyed also, for the fumes of sulphur (sulphurous acid) in the presence of water attracts oxygen from it. The fumes also attract oxygen from any and all kinds of colored goods. This would destroy them at once, as all colors contain oxygen. This increase in oxygen changes the weak sulphurous acid into the strong sulphuric acid, and this would destroy every article of clothing, carpets, curtains, upholstered goods, etc. True, these may be removed, but in most cases they are not, and if they were, the strong sulphuric acid would still attack the woodwork, first destroying the varnish and paint, and then affect more or less the wood itself, leaving a black stain.

The solution of a certain gas in water is called formaldehyde. Like the fumes of sulphur this is very irritating. It is sometimes used instead of sulphur fumes, but when sprayed into a room formaldehyde loses its strength in from ten to fifteen minutes. When exposed to air it undergoes a change and is destroyed. This fact renders it worthless for general use.

We see that it is impossible for the ingenuity of man to destroy nature's weapons (germs). Pure air and sunshine are the only disinfectants, and the only possible advantage in using sulphur fumes or formaldehyde is, that rooms in which they have been used require free ventilation for a long time in order to get rid of their irritating effects, and the fresh air thus secured will cleanse the rooms. It would have done the same thing without the so called disinfectants.

It is well known that bacteriology is, and always has

been, supported principally by State Boards of Health. The members of these boards have created and are now filling many new offices, at a probable expense of many million dollars a year. Human nature is the same in the breast of a political doctor who is seeking office, as in the breast of any other politician seeking office. These are facts, and as such, we see no harm in stating them. Are boards of health the "highest medical authority?"

Dr. Koch.

Dr. Koch lives in Germany. Perhaps that is the reason a few American doctors once thought he possessed supernatural power. A few years ago Dr. Koch discovered a germ which he claimed was the cause of consumption.

For a time Dr. Koch posed as a leader, but many of his followers have deserted him, and in the minds of others he is reduced to the rank and file. Soon after the discovery of his new bug Dr. Koch claimed to discover a new remedy, which he called tuberculin. It should be remembered that in Germany it does not take long to discovery a new remedy. Most anything will do, so long as it is indefinite and profitable. It is admitted upon all sides that Dr. Koch never cured a single case of consumption with his tuberculin, but it is claimed he charged $25.00 for each hypodermic injection, and that he made a fortune out of it. Koch claimed to have discovered tuberculin, yet it has been stated in print that he did not discover it, but stole it from the true discoverer, Samuel D. Dixon, of Philadelphia.

Dr. Koch has since prepared a substance called T. R., which he claims will cure consumption. This preparation is made from the germs themselves, as the doctor now claims they contain a substance that will cure the disease, and the care and attention to detail with which the doctor (Koch) prepares his T. R., is a perfect revelation of the ingenuity of a crazy Dutchman who lives in Germany.

The doctor takes a culture of young germs which he claims are the cause of consumption. "He first dries the germs, then grinds them, then the product is suspended in water, then filtered and dried and pounded and thrashed and treated with drug solvents, washed and filtered and pounded again, then made into an aqueous solution, decanted and pressed." But the doctor is not yet satisfied, and with sleeves rolled up and perspiration dripping from every pore, he still pursues the innocent germ. He places them in a centrifugal machine where any remaining life is whirled out of them. The resulting product is now called T. R.

It has been suspected that the doctor, becoming dissatisfied with his tuberculin, is equally ashamed of his second attempt, hence the abbreviation T. R.

Has Dr. Koch ever cured a case of consumption with his T. R.? No. Even that standard authority, Green's Pathology, page 314, says: "T. R., up to the present, seems to prove that it has no curative effect on tuberculosis in man." Dr. Koch has had several years in which to prove the value of his claims, yet consumption is as fatal to-day as ever. I know there are those who

give Dr. Koch much credit for the discovery of the germ which he claims causes consumption. Other investigators have discovered other germs which they claim may cause consumption. And there may be varieties of germs not yet discovered which inhabit the lungs during this disease.

Having utterly failed with his tuberculin and his T. R., Dr. Koch has, it is said, turned his attention in another direction. In the *Chicago American* of Sunday, October 7, 1900, Dr. Koch is quoted as saying: "That the total extirpation of malaria is possible by the use of the preparation which he has compounded." The same journal also states that Dr. Koch "regards it practicable by the addition of processes he has discovered, to purge every malarial district and keep it entirely free from malaria."

In this instance there is no reason to doubt that "history will repeat itself," and that Dr. Koch's secret remedy for malaria will prove as great a humbug as did his tuberculin and his T. R.

At the present time Dr. Koch is being much discussed by reason of the stand he has recently taken regarding bovine tuberculosis in man. For years State Boards of Health and bacteriologists have been teaching the public that cows milk may convey the disease (tuberculosis) from animal to man. Now, Dr. Koch is quoted as saying that "human immunity to bovine infection disposes of the belief of the infection through dairy products, and he considers this source of danger so slight as to be unworthy of precautionary measures."

Dr. Koch had scarcely made his bow before the Brit-

ish Congress before many American bacteriologists claimed they never said there was danger in dairy products; that is, not so awful much danger, and that it would only be kind o' dangerous like if you took to much.

That reminds us of another class of people who, after spending a lifetime in trying to prove the earth flat, said, after denial was useless, that they never claimed the earth was flat; that is, not so awful flat; that they always knew it was kind o' rounding like.

In the foregoing there is nothing original with Dr. Koch. Prof. Moore of Albany, N. Y., and Prof. Theobold Smith of the United States Agricultural Department, Washington, D. C., proved some time ago all that Dr. Koch claims at the present time. Prof. Adams also gave similar evidence some time ago before the Canadian Medical Association. Doctor Thomas J. Mays, professor of diseases of the chest in the Philadelphia, Pa., Polyclinic, etc., etc., and a well known authority, in his new book, Consumption, Pneumonia, and their Allies, page 191-4, presents indisputable evidence that man is not susceptible to bovine tuberculosis, and this information dates back nearly one hundred and fifty years.

But then, it is much easier for Dr. Koch to discover something that has been discovered before. This gives him the same opportunity to advertise himself; to talk learnedly and extravagantly about wonderful discoveries; about the progress of medical science, stamping out disease; prophylaxis, etc. Yet such shallow pretenses lack the penetration of thought, the practical

turn of mind; the loyalty and devotion which the searcher after the eternal truths must have to coax from nature her secrets.

For years America has been the dumping ground for more foreign therapeutic frauds than all the remaining nations of the earth. Continental Europe seems to forget that every condition is the result of a natural cause; that every disease is the result of a natural cause, and that every cure is the result of a natural cause. Yet, to this simple truth in philosophy, we shall come at last, when the serum therapy and the animal extract mania, which are dominated by unreasonable teachings, unillumed and unregulated by scientific intelligence shall have spent itself (at the cost of the public) and gone the way of its predecessors.

Dr. Metschnikoff.

Doctor Metschnikoff is a Russian. He is the one who first gave out the theory of the white blood-corpuscles destroying germs. Like Doctor Koch, Metschnikoff for a time posed as a leader, and there have been a few American doctors so eager to follow in the footsteps of some foreigner that they considered it a mark of distinction to quote Doctor Metschnikoff.

Why are they silent regarding Dr. Metschnikoff's latest departure, which, according to recent published reports, claim in substance that Prof. Metschnikoff will discover a serum product of the lower animals which will prolong human life to two hundred and fifty years? The professor admits, however, that he is not beyond the laboratory stage.

Prof. Koch has been in the laboratory stage for many years. Prof. Metschnikoff says "an elephant lives three hundred years, therefore, a man ought to live two hundred and fifty." He says the decay of old age is brought on by poisons or germs, and their encroachment upon plebeian cells.

In explaining immunity, page 31, the bacteriologists speak of the toxiphoric cells, and explain why hens do not have lockjaw. I wonder if they ever heard of the plebeian cells? Dr. Metschnikoff says that each of the different organs requires a different serum, therefore there will be a series of these serums. In closing the professor is quoted as saying, that "scientifically the possibility of prolonging human life is established, practically God only knows when we shall discover it."

Scientifically Prof. Koch has been curing consumption for many years, practically God only knows when he will discovery the secret. Is it any wonder that Dr. Metschnikoff's followers fail to come to his support?

Prof. Pasteur.

Many people in this country have heard of Prof. Pasteur. This professor was a Frenchman, and did not propose to sit idly by and let his neighbor Metschnikoff absorb all the glory; for it is reported that at the Pasteur Institute a series of serums have been discovered, each of which is designed to regenerate some particular organ and prolong human life.

We have heard much of Prof. Pasteur's treatment for hydrophobia, yet he has probably never cured a

case of this disease. There is certainly no evidence of such a cure, cannot be. First, because ninety per cent of the people bitten by "mad dogs" do not have hydrophobia; and second, because the disease may develop years after the person is bitten.

At the recent annual meeting of the British Medical Association, Dr. George Wilson, an eminent English physician and medical writer, is quoted as saying: "Pasteur's treatment for hydrophobia is the merest charlatanism"—quackery. Again, it is claimed by some writers that hydrophobia in France has been steadily on the increase since Pasteur's antitoxin treatment was established.

It requires but a moment's thought to see that in the treatment of hydrophobia Pasteur is as helpless as a babe. The cause of hydrophobia has never been discovered. The nature of the poison producing the disease is unknown. Therefore, any pretense to manufacture an antirabic serum or antitoxin is a fraud.

The following is quoted from a recent article on "Rabies and Hydrophobia," by James Howard Thornton, C. B., M. B., B. A. Fellow of Kings College, London; deputy surgeon general Indian Medical Service (retired):

"Rabies in reality is a very rare disease. The popular belief to the contrary arises from the fact that various other maladies common in dogs are mistaken for rabies. It has been ascertained that only a very small proportion of the bites of rabid dogs convey the infection, hence the likelihood of a dog bite causing hydrophobia is extremely small. This was very plainly

shown by the experience of the police in London during the prevalence of the Muzzling Order of 1885-'86. In carrying out the duties of capturing stray dogs, the police received hundreds of bites, but in no single instance did any of these bites cause hydrophobia, though doubtless many of them were inflicted by rabid animals.

"The experience of the attendants at the Battersea Dogs' Home is even more striking. That institution had then been thirty years in existence. The bites inflicted on the attendants during that time amounted to many thousands, some of which must have been received from rabid dogs. Nevertheless there has never been a case of hydrophobia among the attendants. A certain proof of the rarity of true rabies is to be found in the facts that the old writers attached no importance to it, and did not regard it as a serious danger to human beings, while the people at large paid no attention to it at all. Until a very recent period a mad dog was thought to be as rare as a black swan, and it used to be affirmed that there never was more than one in England at a time. But now, a dog has only to appear excited or frightened or to behave in an unusual manner and immediately the cry of 'mad dog' is raised, and the unfortunate animal is set upon and killed.

"I was for many years in medical charge of a large Indian district, with a population of nearly two millions, and had under my superintendence several dispensaries, where at least a hundred thousand sick and injured persons, including numerous cases of dog bite, were treated every year, yet, with all this large experi-

ence, I never saw a case of hydrophobia in a native of India, and I have reason to believe that the experience of others who have practiced in India is similar to mine.

"The rarity of hydrophobia in Great Britain is shown by the statistics of the Registrar General, from which it appears that for the forty years ending 1877, the average annual death rate from this disease in England and Wales was considerably less than one to a million of the population. In 1862 only one death took place from this cause, while in Scotland only three cases of the disease were registered during the years 1855-'74.

"It must be borne in mind that hydrophobia never results from the bite of a healthy animal, and further, that a very large majority of persons bitten by undoubtedly rabid animals escape unharmed. The proportion who contract hydrophobia are variously estimated at from five to twenty per cent. John Hunter mentions a case in which out of twenty-one persons bitten by a rabid dog only one subsequently died from hydrophobia.

"These particulars plainly show how foolish and unreasonable are the periodical scares which have prevailed from time to time ever since public attention was drawn to this subject twenty years ago by the sensational proceedings of M. Pasteur and his followers. Those proceedings have produced a most disastrous effect upon the public mind by giving undo prominence to a very rare disease, and by needlessly magnifying a danger so slight and so remote as to be scarcely deserving of notice.

"Contrary to universal experience, the leading contention of M. Pasteur and his followers has always been

that rabies among dogs and hydrophobia among human beings are very prevalent and ever present diseases, which constantly demand immediate and careful attention. But it is clear from the preceding remarks, that this view is altogether erroneous.

"About 1880 M. Pasteur commenced his researches on hydrophobia, and in the course of a few years he announced that he had devised a system of inoculation by means of which the disease could be prevented in persons bitten by rabid animals, provided they applied for treatment before hydrophobia set in.

"The great reputation of M. Pasteur as an eminent chemist, and a distinguished man of science caused his views to be widely accepted throughout the civilized world, and great numbers of frightened, credulous people flocked to him for treatment. The notoriety of his proceedings, and the pernicious prominence which was given to an exceedingly rare disease, produced a veritable panic in the public mind, in so much that many persons, without the slightest reason, fancied themselves in danger of hydrophobia, and groundless scares, resulting in foolish muzzling orders, have been quite common occurences ever since.

"M. Pasteur varied his treatment several times, using subcutaneous injections of different strengths, the strongest being employed in what he called the intensive method. So many deaths, however, occurred from the intensive treatment that it was quickly given up.

"Evidently M. Pasteur was not at all sure about his system. At first he declared positively that his method would protect all patients at any time before hydro-

phobia set in, but subsequently he introduced many corrections and limitations, for which no scientific reason could be assigned.

"For instance, he did not profess to protect unless the patient came to him within a fortnight of being bitten. He did not reckon deaths which occurred during the treatment, or within a fortnight after the treatment. He kept no record of the patients after the treatment was ended, and took no account of deaths occurring subsequently. He admitted that his inoculations produced only temporary effect, and that reinoculation was necessary after a time, and he did not hesitate to claim as successful cases, any number of people who were in no danger of contracting the disease, as well as cases which infringed any or all of these conditions, so long as they did not prove fatal. All these limitations were purely arbitrary, and were introduced one after the other, to account for and explain away deaths which continued to occur in spite of the Pasteurian treatment, though had that treatment been what M. Pasteur professed at first, these patients ought to have recovered.

"The Pasteurian statistics, indeed, appear to have been compiled on the principle of 'Heads, I win; tails, you lose;' for all the patients who did not die were claimed as cures, while as many as possible of the fatal cases were eliminated on the ground that they were treated too late. Here is a striking illustration of this peculiar method: On the 14th of January, 1887, Lord Doneraile was bitten by a tame fox; he underwent the Pasteurian antirabic treatment eleven days later, and

died, subsequently, from hydrophobia, owing (M. Pasteur said) to his having come for treatment too late. But other patients, who came for treatment after periods longer than eleven days, and did not die, were claimed as cures.

"Any kind of treatment can be made to appear successful in this way, and any quack remedy for hydrophobia, such as that of the Rev. Dr. Verity, mentioned by Dr. Dolan in his work, entitled "Pasteur and Rabies, might show a similar, or even a larger proportion of alleged cures. Dr. Verity, indeed, claimed to have treated more than 2,000 cases without a single failure, so that, if the statistics are to be believed, his record is much better than that of Pasteur.

"The Pasteurian system of treatment has been extensively carried out in France since 1885, and had it been of any value it ought to have reduced the mortality from hydrophobia in that country. The very reverse is the case, for the average annual mortality from that disease in France from 1850 to 1885 was twenty-three, while from 1885 to 1890 it rose to thirty-nine, namely twenty-two among Pasteur's patients, and seventeen not treated by his method. Thus Pasteur's treatment has caused the death rate from hydrophobia to rise by sixteen per annum in his own country. It is worthy of note that a similar result has invariably followed wherever Pasteur Institutes have been established. Particular attention should be given to this argument, as it can neither be contradicted nor explained away, and it plainly shows the utter worthlessness of the Pasteurian treatment.

"It would have been far better for the world if M. Pasteur had never turned his attention to hydrophobia, as his proceedings have done much harm, and it can not be proved that his treatment has prevented the disease in a single instance. Pasteurism has been the cause of incalcuable suffering to animals, and an unreasonable panic among timid, nervous people all over the civilized world, insomuch that some of them actually developed nervous symptoms simulating hydrophobia.

"Besides all this mischief there is no doubt whatever that these idiotic inoculations (to borrow an adjective which Mr. Paget applies to the Buisson treatment) have directly caused the deaths of many unfortunate persons who were in no danger until they were induced to resort to them.

"The apparent success of the Pasteurian antirabic treatment has been due to the circumstances that the vast majority of the patients were in no danger of hydrophobia, and that the fluid with which they were inoculated was generally inert, and therefore harmless.

"The Pasteurian antirabic has been condemned by some very distinguished men, after prolonged and careful investigation. The late Professor Peter, of Paris, pronounced it to be altogether empirical and devoid of scientific basis, and he delivered a crushing indictment of it before the Paris Academy of Medicine, in which he pointed out that several of Pasteur's patients had died of a form of hydrophobia almost unknown hitherto in the human subject, but very closely resembling the disease produced by Pasteur in his laboratory rabbits.

In short, they had died not from a dog's bite, but from the virus injected into their bodies by M. Pasteur's hypodermic syringe! In support of this terrible charge, Professor Peter produced a mass of incontrovertible evidence which Pasteur's supporters have never attempted seriously to question.

"Professor Colin, of the French veterinary school at Alfort, criticised the Pasteurian statistics, pointing out that the certificates produced by the patients were worth nothing, having been drawn up by incompetent people, and that the post mortem examinations of the dogs were equally valueless, as they afford no certain evidence of rabies. He considered that the only way of arriving at a conclusion is by the prolonged observation of the animal, which should be shut up and kept till the characteristic symptoms of rabies declare themselves.

"Professor Billroth declared the Pasteurian system of treatment to be a fiasco, and Professor Van Frisch, of Vienna, made the following statement in his exhaustive report upon Pasteur's treatment: 'Rabbits and dogs which, without preceding infection, were subjected to the last mentioned strengthened inoculation for human beings, were infected with rabies through that inoculation. Hence it may be inferred with great probability, that this method of inoculation may likewise be seriously dangerous to man.'

"Dr. Lutand, of Paris, condemned the Pasteurian antirabic treatment as not only ineffectual, but also dangerous, and cited the case of the postman, Rascol, in proof of this assertion. On the 28th of February,

1889, Rascol and another man were attacked by a dog suspected of being rabid. In Rascol's case the dog's teeth did not penetrate the skin, but the other man was severely bitten. Neither of them wished to go to the Pasteur Institute, but Rascol was compelled by the French postal authorities to do so. He remained there under treatment from the 9th to the 14th of March, and on the 26th he resumed his duties. On April 12th severe symptoms set in, with pain at the points of inoculation, not at the bite, for he had not been bitten. On the 14th of April he died of paralytic hydrophobia, which evidently must have been caused by the Pasteurian inoculations. The other man who refused to submit to this antirabic treatment remained well, though he had been severely bitten by the suspected dog. This is a crucial case, and comment is unnecessary.

"Dr. Charles Bell Taylor, of Nottingham, in his article in the *National Review* of July, 1890, gives the following cases, which furnish decisive proof that hydrophobia is sometimes brought on by the Pasteurian inoculations: Leopold Neé was bitten at Arras, on November 9, 1886. He was subjected to the Pasteurian treatment on the 17th and following days, and died of hydrophobia on December 17th, a month later. *The dog that bit him was perfectly healthy.*

"In July, 1887, Arthur Stoboi, one of the scholars at the Lyceum at Lublin, in Russia, was bitten by a dog and immediately sent to the Pasteur Institute at Warsaw, where he received the usual treatment by inoculation, and was discharged on August 11th, with a certificate of cure, on the strength of which he was read-

mitted to the Lyceum and resumed his studies. On November 9th, however, three months later, he felt pain in the region of the inoculations, and shortly afterwards he died of hydrophobia. *The dog that bit him remained quite well.*

"The groom of Signor Camello Mina was bitten by a sheep dog, and subsequently died of hydrophobia, after having been subjected to the Pasteurian treatment at Milan for a month. *The dog had nothing whatever the matter with it.*

"A young painter at Antwerp, named De Moens, when visiting a friend, was bitten slightly by his friend's dog. He was urged to go to Pasteur at once, which he did, and was subjected to the Pasteurian antirabic treatment from the 20th of March to the 2nd of April, 1889. After his return he was suddenly attacked by hydrophobia, and died on May 17th, 1889. *The dog that bit him remained perfectly well.*

"It is quite evident that these persons died from hydrophobia, communicated to them by the Pasteurian antirabic treatment, and I challenge Lord Lister, Mr. Stephen Paget and the other advocates of Pasteurism to explain these cases otherwise if they can."

Roberts' Lymph.

France and Germany will not be allowed to carry off the laurels without a struggle, for we have aspirants in our own country, who are bearing in their arms life-preservers and prolongators of all kinds.

At present there is being manufactured in this country a lymph compound, combined with "vitalized ex-

tracts." This is called "Roberts' Lymph Compound," and the manufacturers state that "physicians of the highest standing and attainments agree that no other scientist has even attempted the problem, which this firm has positively solved."

The same pamphlet states that "the physicians in charge of the institute where the lymph is used were formerly professors in leading colleges."

Since those in charge of the institute were former professors, perhaps they themselves are the ones referred to as "physicians of the highest standing and attainments" that claim so much for the lymph compound, and especially since it is customary for the manufacturers of secret mostrums to sound their own praises.

The manufacturers tell us the lymph is taken from young animals. They say, "The nutritional changes are studied in the bones of old dogs or cattle." The doctors give tabulated results of experiments on "common cur dogs." How interesting that must be to a sick man or woman. They say the dog's bones will be photographed. And it is suggested that patients wishing to study the bones of "common cur dogs" send in their orders early and avoid the rush. The manufacturers claim the lymph will cure nearly all the diseases that affect the human race, and add that besides the lymph and animal extracts, which are injected under the skin, patients are given a supportive nutritive remedy, by the mouth, and are required to follow the rules of diet, hygiene, etc.

Exactly. Happy thought! For the author believes

that whatever benefit may be derived from this method comes through the common-sense treatment of diet and hygiene.

The manufacturers name the goat as one of the animals from which their precious lymph is obtained, and say that the goat is selected because it is the "toughest" of all animals. We would suppose that first place would be given to that quadraped of the horse genus—

That greets you with a smile,
Then gently telegraphs one leg
And kicks you half a mile.

The animal that so kindly feels
While you're working round his head;
But when you're working round his heels
You're liable to drop dead.

That animal with so little mane
That broke his rider's back;
Then he stopped a Michigan Central train,
And kicked it off the track.

That animal whose voice has never been sandpapered, or smoothed down on an emery wheel, and whose long anterior appendages move back and forth keeping perfect time to the hee-haw, hee-haw, hee-haw —haw—a—a——

It would seem that this animal would be more congenial to all who manufacture antitoxin, lymph compound or animal extracts. More congenial because naturally more companionable.

The manufacturer says: "A large number of institutes will be opened all over the country," and that

"these institutes are not advertised, or otherwise unprofessionally conducted." Again, he says: "I do not wish to extensively infringe upon or anticipate the publication of Dr. Roberts," yet "physicians of the highest standing and attainments agree that no other scientist has even attempted the problem which Dr. Roberts has positively solved."

Can patent medicine manufacturers advertise in bolder language? From time immemorial the savages have eaten the hearts of their enemies to give them courage. It is said our ancestors were in the habit of drinking soup made from calves' lungs to fortify their own lungs. Then a few doctors with high-sounding names told us to take preserves made from the brains and kidneys, to take extracts made from the thyroid and other glands of the lower animals. That was the age of animal extracts and comes down to a very recent date. In fact, a few of these dishes in the form of antitoxins, lymph compound and elixir of life are still on the market, just to remind us of the barbaric past. We understand that the lymph compound is manufactured in secret and that the doctor who is allowed to use it must buy his territory the same as a man who buys territory for a patent right, and having bought the territory, he must next buy the lymph at a cost of thirty-six dollars for one and three-fourths ounces.

We laugh at the superstition of the middle ages, when the alchemist tried to transmute or change the baser metals into gold and to discover the elixir of life, but the manufacturers of serum therapy have

imbibed the same spirit, and now seek the elixir of life in the stale and filthy serums of the lower animals. Yet such delirium will not satisfy the searcher after the eternal truths which underlie all nature, for he will take his stand upon justice, reason and common-sense. He will always regard with abhorrence and disgust any so called discovery of science emanating under the cover of secrecy, as in the case with antitoxins, animal extracts, lymph compound, etc.

Taking filthy extracts from certain glands of the lower animals and injecting them into a human being is revolting, and the practice is disgusting.

Dr. Roberts is not alone in performing miracles. In Buffalo, N. Y., there is a man who cures people after they have had "eighty-one hemorrhages from the lungs, sometimes spitting five pints of blood at one time." Five times eighty-one is four hundred and five pints, equal to about four hundred and five pounds. The weight of the body is thirteen times the weight of the blood it contains. Thirteen times four hundred and five is five thousand two hundred and sixty-five pounds. People who live in Buffalo must grow very large. Some stories are too thin, but this one is too thick.

If Dr. Pierce, the advertiser, can cure a man who has had eighty-one hemorrhages of five pints each, perhaps he can cure a man who has had eighty-two hemorrhages of six pints each. In fact, it is not unreasonable to suppose that all manufacturers of secret nostrums, whether patent medicines, antitoxins, lymph compound or animal extracts, are playing a game with-

out limit. No names have been purposely selected or mentioned. The object is to show the tendency of the quack.

Is serum therapy a fraud or not? In this world we believe that perfect humanity is the highest ambition of the creative power. That statement is rendered indisputable from the perfect life sent to guide our erring footsteps. Has the Divine Intelligence placed in the hands of a few scheming operators the means of reaching that higher plane?

Modern improvements in hygiene may increase the average duration of life, but it will not extend the maximum, neither will elixirs, serums, antitoxins or animal products prevent the natural decay that comes with declining years. These simple truths will remain and grow brighter after the collapsed germ theories, and the departed serums have passed out of human memory.

Are germs the cause or the result of disease? the result.

All tissue destroyed by disease must be reduced—converted into pus, gasses, etc., before it can be eleminated.

Bacteriologists admit this can only result from germ action.

In germ life the same system of repair and waste takes place as in all other forms of living matter, the waste produced by the germs is called ptomains and bacteriologists claim these act as a poison.

Some authorities claim it does not, yet admitting the ptomains are poison, all bacteriology can claim is that

they are more dangerous than the dead tissues which they reduce. Is this true? No, for if nature has designed germs the medium by which dead tissues shall be removed, and at the same time rendered the germs more dangerous than the dead tissue, then nature has made a fatal mistake.

All admit nature makes no mistakes.

If germs are not the cause of disease, what is? What is the cause of epidemics, contagion, etc.? How does disease spread? Undoubtedly some epidemics are caused by atmospheric changes. It cannot be otherwise, because its appearance is so sudden and widespread. It occurs almost simultaneously in different parts of the country. It has been observed on land and ship at the same time. This applies especially to influenza or grip, "hay fever," etc., yet there are diseases that cannot be accounted for in this way. Regarding these, one of the world's greatest physiologists, the late W. B. Carpenter, is quoted as saying: "What is it that determines the infective nature of disease germs?" This something appears to be supplied by overcrowding the patients thus affected. Overcrowding means deficient air-supply, and deficient air-supply means deficient oxygenation of the blood, producing an accumulation in the circulating current of those waste products which are normally eliminated as fast as they are produced. Just thirty years ago I showed that all the known predisposing causes of epidemic diseases might be generalized under one expression, viz., the accumulation of decomposing nitrogenous matter in the blood, either from without as foul air, impure

water, or putrescent (decayed) food, or through its excessive generation within the body—as by unusual waste tissue, or by an obstructed elimination of normal waste—such as results of bad ventilation, or the misuse of alcoholic liquors. And I showed that zymotic poisons (poisons resulting from diseased fermentation), which have no action on pure blood, will increase by seizing upon this appropriate pabulum (accumulated waste in the system), multiply in it, thus setting up a zymosis (diseased fermentation) in pure blood, just the same as the growth and multiplication of yeast-cells take place at the expense of the nitrogenous matter in wort, and affects the transformation of sugar into alcohol." (Wort is unfermented infusion of malt. When fermented the sugar is converted into alcohol and it becomes beer.)

Prof. Carpenter says in substance that pure blood or a healthy system is not affected by the poisons resulting from diseased fermentation, but such poisons will develop upon waste matter if such waste accumulates in the system, just the same as yeast-cells will develop in the unfermented infusion of malt. On page 20 it is stated that the tissue change, repair and waste, which takes place in the body, is a process of fermentation. When the body is diseased the products of such fermentation act as a specific poison or virus, and by means of such specific virus disease may be communicated from one to another.

What is specific poison or virus? It is a product of dead tissue and may result from the destruction of tissue during disease, or may be found in dead bodies.

That is why it is so dangerous for the student or operator to cut his finger while dissecting a dead body, and also why it is so dangerous for a barber to cut himself while shaving a corpse.

Virus contains no living organisms, and produces no effect in a healthy system, because the healthy system contains no waste upon which the virus can act. That explains why some escape disease while others are affected.

Specific virus; i. e., contagious matter, if brought in contact with living tissue, as the stomach or any part of the body, seeks to enter into combination with it and effect decomposition. This tendency is opposed by the vitality of the part, and the result will depend upon their respective strengths. In a healthy system the contagious matter is overcome and digested or destroyed, and there is no disease. When, however, the body contains an abundance of waste matter, the contagium acting as a ferment sets up fermentation in this waste and disease results. The disease is mild or severe in proportion to the amount of waste in the system, plus the amount furnished during the disease. The contagium or specific virus acts as a ferment just as the yeast-cells act as a ferment.

As already stated, there are many kinds of fermentation; as the alcoholic, the conversion of sugar into alcohol and carbonic acid; acetic, the convertion of alcoholic solution into vinegar; lactic, the production of lactic acid in milk; putrefactive, the decomposition of dead matter, etc., etc.

All understand that each of these different kinds

of fermentation are caused by a different ferment, and is the result of a natural law. So, also, each of the different infectious diseases is caused by a different ferment in the form of a different poison, and is the results of a natural law.

Is there any evidence that a specific poison and not a germ causes disease? Yes, and in obtaining such evidence the hog was chosen as a proper animal upon which to experiment, the operators claiming that the hog is nearest to man, and surely there are some who will not question this part of the statement.

"Take a hog or a number of them, and inject them with the so called cholera germ, there will be no results. They will never miss a feed. Now take some virus from a cholera-stricken hog, kill all organisms with carbolic acid. Now inject the virus into another hog, and it will contract the true disease, hog cholera. Now make a culture from one of the diseased hogs, and the germ will be found in it, showing that while the germs cannot produce disease they inhabit the body after disease is established."

The same is true in man. According to the bacteriologists the hogs injected with the germ should have developed the disease, and those inoculated with the virus should have developed blood-poison. This explanation clears up the cause of all infectious disease, while the germ theory only adds to the mystery, because the bacteriologists can find no germ to produce disease in man.

The question might be asked, what is the difference whether a germ or a specific virus causes disease? The specific virus causes fermentation, is just as sure

to spread, and is just as dangerous in its effects as the charges that have been made against germs. The difference is, the specific virus can only emanate from a person having the disease, while germs are present in countless numbers at all times and places. If exposed to pure air and sunshine, as in proper ventilation, specific virus will lose its power to produce disease. This is self-evident, otherwise the virus from the first case, beginning with the creation of man, would have remained with ever increasing force, gathering a fresh supply from each succeeding patient, and if there was a man left to write a history of the world he could only chronicle epidemics, disease and death. There would be no time for wars or politics, but plagues, pestilence and famine would fill every page, for every man, woman and child would be exposed again and again to each infection, while to-day comparatively few have disease. Even Pasteur, of hydrophobia fame, is quoted as saying: "That the exciting cause of disease can be weakened and destroyed outside the body by a natural agency, pure air."

While pure air and sunshine will destroy specific virus, it will not destroy germs. Bacteriologists claim that germs are "attenuated," "destroyed," etc., by fresh air and sunshine. Bacteriologists do not know whether they are or not. Certain conditions may render germs inactive, and later they may be as frisky as ever. This is proven by the extremes of heat and cold which germs can bear without being destroyed. Germs that have been subjected to a heat of 302 degrees F. and a cold of 248 degrees F., have afterwards been found to grow vigorously in favorable surroundings. This is ninety de-

grees above boiling water and two hundred and sixteen degrees colder than ice. Even if it were true that fresh air and sunshine destroy germs, the results are the same, for germs are as numerous to-day as one thousand or one million years ago, and they will be as numerous one million years hence as they are to-day. The bacteriologist who tries to destroy germs would be equally as successful if he would try to destroy matter.

Yet, we admire the determination with which the bacteriologist clings to theory. It reminds us of the words—

> If you strike a thorn or rose,
> If it hails or if it snows,
> Keep a-goin'.
>
> 'Tain't no use to sit and whine
> Cause the fish ain't on your line,
> Or if the weather kills your crop
> And you tumble from the top,
> Keep a-goin'.
>
> Spose you're out of every dime,
> Tell the world you're feelin' fine,
> If you get broke it ain't no crime,
> Just keep a-goin'.

It also reminds us of the story of an aged minister, who believed every word of the Bible, and everything else that appeared in print. Especially did he tie to "Gospel Songs No. 2." The choir wished to change and get something more up-to-date, but the aged minister would not have it. One day some young rascal pasted into the copy of hymns devoted to the pulpit a printed slip of another kind of music. The pasting was so deftly done that no eye could detect it. The

following Sunday the good man opened by chance to read the first hymn—he always opened by chance—he opened to the pasted page and began to read, in a deep voice:

"I'm a double-jointed huckleberry aching for a fight."

So determined was the good man to cling to Gospel Songs No. 2 that he read the first line through without stopping. He shut the book on his finger, looked at the cover and saw the words, "Gospel Songs No. 2." That settled it and he read the second line:

"I can eat a pound of liver, beef or pork,"

The aged man closed the book again, scrutinized the cover—'twas all right; it bore the words "Gospel Songs No. 2"—but there were smiles in the audience and other evidence of unbelief, showing a lack of confidence. However, the good man remained undaunted, and so determined was he to cling to Gospel Songs No. 2 that he re-adjusted his glasses and read more firmly than before:

"I can whip a pair of catamounts and eat 'em, when I'm tight,"

"Brethren," said the good man with a puzzled look, "I don't remember seeing those words in this book before, and holding the book up to view he exclaimed, "but this is Gospel Songs No. 2," and his voice grew louder and firmer as he said: "I will read the remaining line of the first stanza:"

"I'm a terror from the country, watch my smoke."

CONSUMPTION.

There are more deaths from consumption than from any other disease. It is estimated that in the United States alone more than one hundred thousand die annually from consumption. Why so many deaths from this disease?

The ordinary case of consumption is no more nor less than a slow process of pneumonia or inflammation of the lungs.

The lungs may be represented by a tree hanging with its top down. The body and limbs of the tree would represent the large and small air tubes. The body would represent the trachea or "windpipe," and the innumerable branches, their divisions and subdivisions would represent the smaller tubes, and three or more dilatations like a small hollow bead on the end of each twig would represent the air-cells. The air tubes open into the air cells, and both tubes and cells are lined with mucous membrane which is continuous from the mouth and throat. All are held together by a connective tissue frame work. This frame work is elastic, hence the power of the lungs to expand and contract. The heart and lungs are the only organs through which all the blood passes. In the heart it simply passes from one cavity to another, but in the lungs it must pass through the intricate network of thin-walled vessels called capillaries.

The heart is a hollow muscular organ; a longitudinal septum or partition divides it into two lateral halves, which from their position are called right and left heart. A transverse septum; i. e., one extending from side to side, again divides the heart into four cavities, two upper and two lower. The right heart controls the circulation through the lungs only, the left heart control the general or systematic circulation. The dark venous blood from the whole system is received into the right heart, and sent through the lungs where it receives oxygen from the air we breathe, and is returned to the left heart; this contracts and sends the bright arterial blood throughout the system. The right and left heart are really two organs molded into one, nature's method of economizing space and power. The heart cavities are lined with a delicate membrane which is continuous with that lining the arteries, picked up folds of this membrane form the valves which guard the openings between the cavities.

The channels through which poisons are eliminated are the digestive tract, kidneys, lungs and skin. When food does not digest it ferments, and as a result there are many poisons produced. The veins of the stomach and those of the digestive tract unite to form the portal vein, and the portal vein enters the liver, hence many of the poisonous substances resulting from indigestion are carried direct to this organ.

The liver tries to reduce the poison, but fails; its effects together with the irritation from the impure blood overcomes more or less its vitality, and its action is interfered with, constipation follows, and the poi-

sons in the system are increased. The waste interferes with the circulation in the small peripheral vessels, elimination by the skin is clogged, the kidneys do what they can, but are hopelessly behind all the time. There is one other avenue by which the system may purify the blood; the lungs.

The lungs are supplied with two sets of vessels, which, from their minute size are called capillaries. The arteries divide and redivide until they penetrate all parts of the lung substance. One set of capillaries supplies nourishment, the other set envelopes the air cells for the purpose of absorbing oxygen from the air we breathe. This set of capillaries lay just beneath the delicate mucous membrane which lines the cells.

Animal membrane has the power of admitting gases (oxygen) and yet remain impervious to fluid (blood). It is estimated that here are six hundred million air cells in the lungs, and that their combined surface is more than seven times greater than the whole outer surface of the body. This surface is literally covered with small vessels (capillaries) through which the blood is continually pouring. Nearly all the blood in the body passes through the heart and lungs once every minute. One-twelfth of the weight of the body is the weight of the blood. This is equivalent to nearly two thousand pounds of blood which must pass through the lungs every twenty-four hours.

The system of vessels which supply the lungs with nourishment, and the system through which the blood is oxydized are entirely separate. The system which nourishes the lungs is given off from the left heart,

while those that carry the blood for oxidation come from the right heart. The blood which is sent to nourish the lungs is bright red; that sent for oxidation is dark venous, and contains many impurities.

Uric Acid.

Uric acid is the product of metabolism or tissue change. Its chief source of supply is the liver. In health this uric acid is oxidized; i. e., unites with the oxygen from the air we breathe, is converted into urea, and the urea is eliminated by the kidneys. As stated, the return circulation carries many poisons from the digestive tract to the liver, heart and the lungs. Uric acid is also sent from the liver direct to the lungs. Every poison in the system is carried by the return circulation to the heart and sent direct into the lungs, and inflammation is a frequent result.

The amount of oxygen inhaled grows gradually less, and the oxidation in the blood of certain unfinished products is rendered less complete. The uric acid is not converted into urea, but remains an irritating substance.

Lactic Acid.

Lactic acid exists in most parts of the body and is supposed to be derived from muscle tissue. The excess of this or uric acid is thought to be the cause of rheumatism. In health lactic acid is also oxidized and converted into carbonic acid gas and water, and eliminated by the kidneys and lungs. But with the diminished amount of oxygen taken into the system, this

change does not take place, and it, too, remains an irritating substance. These and many poisons from the digestive tract are being continually poured into the lungs, and thus the irritation and inflammation are increased.

The return circulation already mentioned carries the septic blood to the right side of the heart and from there every heart-beat sends it into the lungs where it tries to pass through the capillary net work of small vessels. The result is engorgment or congestion, and a low form of inflammation as stated. Now some trivial occurrences as wet feet or exposure may result in a bronchial catarrh, which ordinarily is easily recovered from, but with the lungs previously inflamed and their vitality at such a low ebb, the case becomes more chronic.

Consumption is not "ketching" as claimed by some, but depends upon a train of conditions as briefly described. Months and years are required to develop the disease. The low form of inflammation means too much blood, and too much blood means an increased growth of the part. All parts of the body are prevaded by what is called connective tissue. This acts as a frame work and supports the different organs and the different parts of each organ, and all the tissues of the body. It is strong and fibrous, and in the form of tendon it joins muscle to bone. It also forms ligaments, uniting the ends of bones and forming joints, it forms cartilage which covers the ends of bone, and thus prevents friction in joints. It is attached to the different organs holding them in position. It per-

meates all parts of the organs, and thus supports the different glands and specialized cells. It unites the skin to the deeper structures, in the form of loose meshes it forms a bed for the transmission of vessels and nerves, slightly modified it forms the frame work of the brain and spinal cord, it unites the spinal column —it forms thick layers between the vertebra. It forms cartilage, it is bright and glistening and forms the white of the eye, after forming framework for all the soft tissues it is itself supported by its attachment to bone.

It has been stated that inflammation produces an over-growth of this tissue. In the low form of inflammation resulting from septic blood, the over-growth always takes place in the connective tissue just mentioned. As naturally supplied this tissue develops with the growth of the body, but when resulting from inflammation it invaribly contracts, and this fact renders it pathological or diseased. The inflammation and congestion means too much blood, and as a result of this overfeeding some of the connective tissue cells enlarge, and as the growth continues they divide and subdivide. Beginning in the form of small round cells, next they elongate and are called spindle cells, then fibre cells, and when the limit of their growth is reached they contract and become hard and fibrous. This new tissue takes no part in the work carried on by the organ in which it occurs, but crowds out more or less the natural, and the organ is weakened in proportion. As the new tissue continues to contract healthy tissue is caught in its meshes and destroyed. Its unyielding

fibers untangles all structures. Blood vessels are caught in the contracting fibers and the circulation is lessened or cut off, and the parts supplied by such a vessel atrophies, degeneration follows.

Every scar is an example of this kind of tissue. The scar looks light or dark in proportion to the number of blood vessels destroyed. A wound that is allowed to gap is filled in with this new connective tissue. A burn gives the best illustration of the contraction of connective tissue resulting from inflammation. As a result of burns many people have seen the hands or face drawn out of all resemblance to a human being. When affecting the liver, the organ is much shrunken and shriveled. It is called rum drinker's liver, and is caused by the prolonged use of alcohol. Alcohol also produces the same changes in the kidneys in some forms of Bright's disease.

These changes take place more often in the lungs for the reasons given. The enormous amount of blood which is being constantly poured into these organs, if unhealthy, will paralyze the delicate nerve fibers which control the size of the small vessels; the vessels dilate and too much blood is the result. In health the blood passes through the walls of the vessels sufficient to nourish the surrounding tissues, but now the amount is greatly increased, and the tissues are overfed, hence the overgrowth, as described. In the lungs the pressure from the smaller vessels and the new growth strangulates the circulation as elsewhere; while the contraction of the new growth obliterates many vessels,

air cells and nerve fibers. Oxydation is lessened, nutrition is interferred with, and vitality is brought to a low ebb. Page 136 states that the lungs were the other avenue by which nature may purify the blood; but elimination by this route is lessened, and inflammation increased in proportion to the changes described.

The amount of connective tissue overgrowth is always in proportion to the amount of inflammation and septic blood. Contraction may continue until the lungs are only one-half or one-third their natural size. If inflammation and swelling are severe enough the tissue will be destroyed so rapidly that one or more abscesses may form, or gangrene may result.

The description of the natural lungs as given, the septic blood with the formation of irritants producing a low form of inflammation as described, and the changes produced by such inflammation actually occur and constitute what is called "the regular old-fashioned consumption." The result is perfectly natural, it could not be otherwse. Every doctor of experience and every pathologist knows this to be true. These changes take place very slowly, that is why consumption is such a slow, lingering disease; that is why a man with consumption may live five, ten or twenty years and sometimes die from other causes. And as already stated this is no more or less than a slow form of pneumonia or chronic inflammation of the lungs. The danger is increased by the irritation produced by dust as met with in mills, factories, stone quarries, iron works, etc. To prove this we have only to remember

that those engaged in such work are more liable to consumption, and contract the disease much more frequently than those engaged in out door life.

Tuberculosis.

There is another form of consumption called tuberculosis. In this form of disease the septic blood produces or results in the formation of a poorly organized tissue in the form of little nodules or tubercles, hence the name tuberculosis.

The tubercles are small nodular masses about the size of a millett seed (variable). Tubercles are formed as follows: First, an irritant, this excites inflammation and new growth. These new cells are sometimes called embryonic tissue, or granulation tissue, from their granular appearance. It is a form of connective already described. When surrounding a tubercle or diseased spot in the lung it presents a firm resistant surface, and in the majority of cases checks the spread of the disease, and that is the reason so many recover from consumption.

Tubercles are produced by a low form of inflammation resulting from self-generated poisons in the system, as described. The tubercles do not contain blood-vessels; their lack of nourishment and failure to organize as healthy tissue leaves them without foundation. They are built from septic blood; they have but little vitality, and no duty in life, hence easily break down. Many new cells die; many white corpuscles lodge at these points loose their vitality and die. Blood vessels always contain the elements of fibrin, and these ele-

ments escaping from the swollen vessels unite in the inflammatory tissue, and together with the destruction of many new cells, white corpuscles and other waste products form the purulent matter which is expectorated. In all forms of consumption of the lungs the walls of the small air tubes and their dilated extremities, the air cells are thickened by inflammation, and both are more or less filled with a catarrhal exudate, and embryonic tissue; some of which is cast off before it has time to mature. The changes and conditions described are responsible for the consolidation present. In quick consumption death occurs before many of the changes have time to occur.

The cause of quick consumption is, that the system is so overcome with self-generated poisons, as described, that degenerative changes occur in different parts of the body at the same time—as the lungs, pleura, digestive tract, peritoneum, kidneys, liver, brain, etc. These cases prove rapidly fatal.

In tuberculosis, pathologists teach that the tubercles first form in the mucous membrane which line the air cells. This corresponds exactly with the statements made; i. e., that each air cell is surrounded or enveloped in a net work of small vessels, and through this system of vessels the blood is constantly pouring, and if unhealthy and irritating produces a low form of inflammation which may result in tuberculosis. A dead or dying cell first becomes the center of the tubercule by exciting inflammation around it. Dead tissue always excites inflammation, this is nature's means of checking disease. The inflammation surrounding the tuber-

cles is the same as would surround a bullet or any other foreign body that might enter the lungs. The same condition is present with every abscess. The zone of new tissue which surrounds the tubercle or abscess constitutes the battle line; it is the struggle between the living and the dead. The same conditions are present in gangrene. It has been stated that a dead cell forms the center of a tubercle by exciting inflammation around it; also, that dust aids in producing consumption. Dust may also aid in producing tuberculosis. When the vitality of the lung tissue is at a low ebb, as described, a small portion of dust from the mill, the factory, or that furnished by the stone cutter or iron worker, may lodge in an air cell and form the nucleus of a tubercle. Here, again, this class is more liable to this disease.

Gases arising from low land, bad air, poor ventilation, lack of sunshine and exercise also aid in producing consumption.

Besides the reasons already given for consumption, Doctor Thomas J. Mays, A. M., M. D., professor of diseases of the chest in the Philadelphia Polyclinic, visiting physician to Rush hospital for consumptives, etc., and recognized as one of the most able men in the profession, says in his 1901 treatise on consumption and pneumonia, that any pressure upon the nerves which supply the lungs, pressure from an enlarged artery (aneurism), pressure from a tumor, any inflammatory swelling, or pressure from enlarged glands may cause consumption.

The lungs are supplied by two nerves which have

their origin in the lower and back part of the brain, at its junction with the spinal cord, and the pressure results in more or less degeneration of these nerves, and a corresponding loss of lung power. The power of respiration is lessened, oxydation is lessened, nutrition is lessened, uric acid, lactic acid and other irritants already mentioned are increased, and degeneration of the lung tissue is a natural result.

A tree cannot live without roots. The hand cannot live with a constricting band about the arm. An organ cannot live with its nerve supply pressed upon by tumors or inflammatory swellings. Degeneration will follow and the organs supplied by such nerves will suffer in proportion.

Dr. Mays says that poison and irritation from syphilis, mercury and lead produces degeneration of many nerves including those which supply the lungs, and consumption is the most frequent termination. He records many cases of consumption caused by mercurial poisoning. Page seventy-nine, "seventy-one per cent of those who work in mercury mines or those exposed to mercury fumes die of consumption." "Consumption is a common inheritance of those engaged in mercury manufacture." Page eighty-four, "Consumption is from two to three times more prevalent among lead workers than among others living in the same locality."

Lead and mercury are eliminated from the system slowly, hence their greater liability to accumulate and produce irritation and inflammation. Doctor Mays states that if recovery is not complete consumption is most apt to follow typhoid fever, whooping cough,

measles, influenza, etc. Page 104, "Pulmonary diseases and especially some form of consumption are some of the most common sequellæ."

Uric Acid.

Doctor Mays mentions uric acid as another cause of consumption. Page 105, "It seems that the uric acid diathesis is in some way closely connected with, and is probably indirectly responsible for consumption."

We have already mentioned uric acid on page 137. On page 400 Doctor Mays says: "Among the toxic agents which have the power of engendering pulmonary consumption alcohol stands preeminent."

Doctor Mays draws his conclusions from a large field of observation, and by means of post mortem examinations by himself and many others in different countries. Such evidence cannot be successfully denied.

Dyspepsia is the mother of consumption. The irritation produced by mercury, lead, syphilis and the various other poisons mentioned all interfere with the higher forms of digestion which are carried on in the circulation.

In consumption the diseased portion of a lung may become calcified; i. e., lime salts carried by the circulation may be gradually deposited. In health the little cells constituting the lung tissues do not absorb lime [illegible] their diseased condition their selective power is weakened or destroyed. The diseased area may become encysted; i. e., surrounded by a thin membrane of connective tissue, as already described, or the connective tissue may send fibrous bands through the

diseased part when it is said to be organized. Blood vessels are supplied and the healing is permanent; the natural lung tissue is never replaced. Degeneration may cause the tissue to soften and break down—liquefy—and this may be followed by absorption; i. e., the matter is carried away by the circulation; it may be expectorated, or both. It is by such marks that post mortem examinations demonstrate that consumption has existed in some part of a lung at some time.

Arteries last longer than lung-tissue, hence they may extend through cavities where the lung is destroyed. These gradually become weaker until during the act of coughing they may rupture, causing hemorrhage and sometimes death. Or the inflammation may allow blood-clots to form in an artery, and the artery may be obliterated before the advancing disease can reach it. This lessens nutrition and hastens the disease. An artery may be weakened where it is in close relation with a cavity. This will cause bulging into the cavity. This constitutes an aneurism. As fast as the cavity increases the aneurism may continue to fill it, until rupture occurs, which results in fatal hemorrhage.

The Pleura, a thin membrane which encloses the lung, may become inflamed, greatly thickened and more or less obliterated by inflammatory adhesions; i. e., it may become attached to the chest wall at one or more points, forming cavities, and these may be filled with a clear, purulent or bloody effusion, the result of the inflammation. The development or first stage is insidious or without the patient's knowledge. There may be a gradual loss of flesh and strength without any

known cause, poor appetite, slight rise in temperature, little cough, pallid appearance, or there may be pain at the primary seat of the disease. In what is called the second stage the diseased tissue commences to soften. This is indicated by increased cough and more or less free expectoration. There is increased loss of strength, sensations of chilliness, usually in the morning, with slight fever in the evening, night-sweats and increased emaciation. In all these conditions the patient usually remains hopeful. Physical signs are omitted.

Germs.

Bacteriologists tell us that consumption is caused by a germ, and that the disease is contagious. Contrast the foregoing with the following teachings of bacteriology:

The Philadelphia Board of Health teaches that "all cases of tuberculosis of the lungs take origin directly or indirectly from other cases, this is now an established fact."

The New York Board of Health states that "consumption is a disease of the lungs which is taken from others, and is caused by germs."

The Michigan Board of Health states that "consumption is a dangerous communicable disease, and is caused by a germ, etc., etc."

In the *Physician and Surgeon* for November, 1899, is an article stating that "there is no longer any dispute as to the cause of consumption. Scientists are

agreed that the consumption germ is the ultimate cause of all so called tubercular processes." In this connection we have only to remember that regarding the cause of disease, bacteriologists are not "scientists."

Regarding treatment, this same bacteriologist says: "Many have recovered from consumption in spite of treatment." This can only mean in spite of improper or wrong treatment. Here the bacteriologists speak with authority, for if there is any one who ought to understand improper treatment, it is they. Again, the article mentioned contains these words: "Others have sacrificed life to the absurd emanations of unbalanced brains." It is true that emanations from unbalanced brains may destroy life, and it seems as though this fact alone would set the bacteriologists to thinking. The writer of the article says: "The finding of the germ in the sputum is the important factor in diagnosis."

Again he states, "We should not condemn a person to death because a few consumptive germs have been found in the sputum."

Again, "There is no longer any doubt about the cause of consumption. Scientists are agreed that the consumptive germ is the ultimate cause of all so called tubercular processes."

Now we can understand how it is that "life is sacrificed through the absurd emanations from unbalanced brains."

Such talks reminds us of the small boy's composition on anatomy, which began something like this: The

body consists of three parts, the hed, the chist and the stummick. The hed contains the eyes and brains when there is any.

Green's Pathology, page 363, states that "Tappeiner caused dogs to inhale daily for fourteen days six grams (about twenty-one teaspoonfuls) of tubercular sputa, delivered during six hours from a spray into a narrow box containing the animals." The dogs "became tuberculous and thus tuberculosis came to be regarded as a *specific infectious disease.*" The remarkable feature in this transaction was that the dogs lived long enough to carry out the experiment. Here were a number of dogs shut in "narrow boxes" and literally fed on sputum from tubercular patients, and because the dogs died, tuberculosis was declared a "*specific infectious disease.*" What foolishness.

That eminent authority, Doctor Thomas J. Mays, says in his treatise on consumption, page 195: "Schottelius repeated Tappeiner's work, with some variations. Instead of causing his dogs to inhale the sputum from tuberculous persons only, some were made to respire the sputum of bronchitic, but non-tuberculous persons; others, paticles of limberger cheese suspended in air, and still others were made to breathe finely powdered brain substance. In all these cases nodules, analogous to miliary tubercle, were developed." Doctor Mays also gives much other evidence of a like nature.

The bacteriologists also tell us, on page 369, Green's Pathology: "Having no power of motion, the white blood-cells must carry the tubercle bacilli through the mucous membrane lining the air-cells and tubes of the

lungs. The white cells wandering short distances may easily reach the surface, and there meet, enclose and carry back the germ. If the corpuscles sicken while the germ survives, the latter may find themselves in some place where they can thrive and multiply, and thus tubercles may arise."

This merely explains how consumptive germs gain a foothold. Regarding the manner in which the disease spreads, page 371 states: "It is supposed white cells enter a primary focus, take up a germ and wander out again into the surrounding tissue, there to sicken and swell into a giant cell, not far from the parent mass. A fresh tubercle thus forms, etc." Page 356 to 370, and many other pages, contain various theories from different bacteriologists. They tell us the white cells have the power to destroy germs, see page 54. That they act as a body guard, "a standing army," and protect the body from invading germs. According to this nature's plans are defeated. Her means of defense is converted into a means of spreading disease.

It should be remembered that in consumption, as in other diseases, bacteriologists deal only with theory pure and simple. They have absolutely nothing to offer except theory. They make all their experiments upon rabbits, guinea pigs, stray dogs, Algerian rats, etc.

For years they have been raising, examining and experimenting with what they are pleased to call the consumptive germ, and they understand its habits, conduct and size so well that on page 509 of *Physician and Surgeon* for November, 1899, they tell us that it

requires "seven million consumption germs to fill the eye of the finest cambric needle." What valuable information, and how it aids in bringing back to health a diseased and weakened constitution.

For years health boards and other bacteriologists have taught that the germ discovered by Doctor Koch is the cause of consumption. But since that time so many other varities have been discovered that admitting for the moment that consumption is caused by a germ, the bacteriologists could not tell to-day what germ produces the disease. But even some bacteriologists claim that it is not a germ disease at all, as the following shows:

Page 368, *Physician and Surgeon*, says: "Hueppe, professor of hygiene in the University of Prague, says: I have arrived at the definite opinion that the tubercle bacillus is a parasitic growth, and is not a true bacterium at all.'"

Page 369 says: "In form we find in one stage of growth a round coccus-like organism; again, long bacillus-like threads, and still again, the peculiar ray or club-shaped form."

In an able article on tuberculosis in the *National Medical Review*, page 205, it is stated: "The tubercle bacillus is an organism whose status (permanency) has not even yet been definitely settled. There are those who consider it a form of fungus growth and there is some evidence that renders it not improbable. Branching forms have been described resembling hypha; i. e., a long tread-like branching in certain

plants which have neither roots, stems or leaves." The growth upon "bouillon" is peculiar and mould-like.

The December number of the *Physician and Surgeon*, page 561, states: "Regarding the disease in question, tuberculosis, the more conservative observers, including also I am happy to say, many bacteriologists, concede that although the tubercular germ is the important factor in the large majority of cases, other germs, such as the streptococcus, staphylococcus, pneumococcus, etc., may play the greatest part in the pathogenesis of most cases. Again, it happens that new varieties of tubercular germs are being discovered, which seem to differ from the typical one in many respects, viz., the avian, bovine, the spirilla or branching form, the actinomycotic forms, the smegma bacillus and the bacilli found on grass, hay, etc."

The foregoing corresponds exactly with the statements on page 43, viz., that all kinds of germs inhabit the mouth, being taken in with food and drink, and also from the air during the process of breathing; and that they are continually being carried downward through the act of swallowing, and by respiration, and thousands of them find their way into the air-passages. Hence the man with the microscope may find any and all varieties. Bacteriologists claim that while the germ may be absent in the "regular old-fashioned consumption" they are always present in tuberculosis. Yet it is well known that there are many cases of tuberculosis in which no germ can be found, as just stated. The solution is very simple, notwithstanding; the man had

consumption, there was still vitality enough to destroy germ life before they reached the lungs. In such cases germs would be absent. As stated on page 152, many varieties of germs are present in most cases of consumption. The products of inflammation furnish a field in which germs can absorb nourishment, hence their presence.

It should be remembered that germs are simply scavengers, feeding upon septic matter or upon the septic elements of the blood. Their presence in such tissue is perfectly natural. Their action aids in breaking down and liquefying dead and useless matter, and giving the elements back to nature and thus aiding in the recovery of the patient and in the world's economy. Germs were created for this purpose. They are the medium through which all material progress has been made. As already stated, a dead cell becomes the center of a tubercle by exciting inflammation around it. Dead cells are always found in tubercles. This is known and taught by every pathologist and bacteriologists admit it is true. Bacteriologists, however, claim that tubercles are caused by germs, yet germs are not found within the tubercles. This is also known and taught by every pathologist, and bacteriologists admit it is true. If tubercles are caused by germs, why is it that germs are not present in the tubercle? It is only reasonable to believe that if tubercles were caused by germs the germs would be present there. Bacteriologists claim that germs are present in the tissue *surrounding* the tubercle. Exactly. The reason is, the tubercles contain no blood vessels and offer no

nourishment, while the inflammatory zone surrounding the tubercle contains an excess of blood, but the blood is unhealthy. The pressure from the dilated vessels and the inflammatory zone of new tissue strangulate the circulation and vitality is destroyed.

In such a field germs find nourishment, and meet with no opposition. The products of inflammation always furnish a field for the development of germ life. This is nature's plan and nature's plans are perfect. For instance, a tubercle contains no blood vessels. Tubercules are composed of dead tissue cells, and dead tissue needs no blood vessels. Nature never supplies something for nothing. But the man needs support to eliminate the dead tissue, it cannot be eliminated altogether any more than a bullet or any other foreign body. First, it must be reduced to a liquid or gaseous form, and it is for this purpose that germs are present. By their power to produce fermentation they reduce the dead tissue and aid in separating it from the body. Here we see that the absence of the artery and the presence of the germ are a wise provision. Every board of health and bacteriologists admit that "all the processes comprised in the terms fermentation and putrifaction (degeneration of dead tissue) are due to the action of vegetable organisms—germs."

Millions of germs of all varieties enter the system every day and every hour; they are everywhere present, in the body as well as out, and reduce dead matter to its ultimate elements. This law of supply and demand has existed since creation began and will continue as long as life is maintained.

While germs destroy dead tissue in the lungs, they take no part in producing the long train of conditions which lead up to the disease, and which may include several years.

Dyspepsia is the mother of consumption. Everyone understands that in every case of consumption, the process of digestion and assimilation suffer more or less from the first. These conditions are not caused by germs and are not "catching." Their very nature renders it impossible. The fact that consumption is of slow growth, requiring months and years to develop, is sufficient to oppose all thought of contagion.

Health boards teach that "there is no longer any doubt regarding the cause of consumption. Scientists are agreed that the germ of tuberculosis is the ultimate cause of all so called tubercular processes."

"All cases of consumption are taken from others."

"Consumption is contagious."

"Consumption is caused by a germ," etc.

Are these statements true? Let us see. In a recent discussion regarding the contagiousness of consumption, as reported in the December, 1899, number of the *Physician and Surgeon,* the following statements were advanced by some of the leading physicians of this country: "I certainly believe that the state of our society at the present time does not warrant any such measures as are being taken by the board of health. "I do not think that the profession as a whole in this state will back up the State Board of Health in this connection, and one of the difficulties is that the man who has charge of the work of the board of health in

this state is a man who has never practised medicine. He is a man who gets all the knowledge he has on the subject from a study of theoretical books. His knowledge is the knowledge of the laboratory, and not of the practical."

"I have had some personal experience in my own family with this disease. I had a very near and dear relative who had consumption for a great many years, and who eventually died of it. She had a husband and four children who lived with her all that time in the same house. Absolutely no precautions whatever were taken. She lived for years in that house, coughing as consumptives do. Not one of the household ever acquired the disease, nor have they to this day. To have been obliged, as a medical man, to do to that relative what the board of health has ordered shall be done to other consumptives in this state, to me would have seemed cruel and useless beyond all expression."

Another physician said: "I am of the opinion that tuberculosis is not contagious, and for that reason I would oppose quarantine and isolation, as proposed by the board of health."

In an editorial appearing in the May, 1899, number of the *Medical Brief* is the following: "Our local medical dictatorship, ordinarily known as the board of health, has succeeded in getting a bill introduced to the city council declaring consumption contagious. This act is an outrage on both the medical profession and the people of the community. By this bill the health board arbitrarily assumes the authority to decide

that consumption is contagious, notwithstanding the fact that the ablest men in the profession say that it is not. The bill asks for a grant of what is practically unlimited power to adopt and execute such measures as the board may deem necessary to stamp out the disease. That is to say, any person suspected of consumption has no rights which the health board is bound to respect. He may be snatched away from home, friends and business, buried alive in some cheerless hospital, there to drag out a miserable, monotonous existence, at the dictum of a few political doctors.

The men who compose our health boards are seldom men of large clinical experience. In the very nature of things, men who are doing large practices have no time to give to official duties. It is the men who devote themselves to the theoretical and speculative side of medical science who seek office, then misrepresent the profession and usurp their rights, by their abuse of authority. We should like to know on what grounds health boards assume the right to act for the profession," etc., etc.

Again quoting from the September, 1899, number: "Our local board of health is again at work, trying to secure the passage of an ordinance empowering it to take measures as may seem necessary to prevent the spread of tuberculosis. The text of the ordinance is very broad in its scope, giving the board full control of all cases of consumption. Physicians are required to report every case in their care, and the board is empowered to fumigate the houses of patients, and make other provisions to prevent the spread of the disease.

Mark the indefiniteness of this last clause. It can be used to legally cloak any measure of oppression which the health board may choose to employ. Moreover the ordinance recognizes the contagiousness of consumption as an established fact, whereas it is a barefaced assumption on the part of the board. The contagious nature of consumption is denied by all the ablest men in the profession. Legislative measures to stamp out consumption are not new, and have always proved inadequate."

Another article in the March, 1900, number states: "Regarding the California board of health, dominated by a German physician named Maher, who entertains the delusion that consumption is contagious, it proposes that no person suffering from consumption shall be allowed to attend the public schools of Oakland, in the capacity of teacher or scholar. Any employee or pupil under the jurisdiction of the public school department, suspected of having pulmonary tuberculosis, must either leave or submit to a bacteriological examination by the city bacteriologist, whose finding shall be the only evidence(?) required by the board of education. If consumption were contagious there would be no state of California—no Oakland board of health to pass the time making foolish rules. If consumption were contagious the civilized world would long since have been depopulated," etc.

Thomas J. Mays, already quoted, says in his new book on consumption, page 197-210: "Certain facts have given rise to the deep-seated and prevalent belief that phthisis is a most contagious disease, and that if

measures of isolation and disinfection are properly enforced, the disease, as is held by some, will be exterminated in a single generation. By common consent it must be admitted that if this doctrine of the stamping out of this disease is correct it should be regarded as a sacred trust, and should receive the sanction and encouragement of every loyal citizen. If, on the other hand, it is erroneous, it is equally clear that those who are afflicted with the disease are terribly wronged and injured and that the public is deceived concerning the true nature, cause and prevention of consumption.

"Physicians who are constantly exposed to consumption are much less subject to this disease than are others who scarcely come in contact with it, except by chance. The statistics of the Brompton Hospital for Consumption, in London, show that during a period of thirty-six years not a single clearly authenticated case of consumption arose within its walls among its twenty-nine physicians and assistant physicians, its one hundred and fifty clinical assistants and its one hundred and one nurses, of which there existed a health record. The statistics of Friedrichshain Hospital, in Berlin, as furnished by Dr. Fürbinger, demonstrate that during a period of sixteen years out of 459 male nurses there were 4 (2 of whom were tuberculous before entering); of 339 female nurses, there were 2; of 83 physicians, there were 3 (1 of whom entered with the disease) who became consumptive. Of 108 Victoria sisters, who were engaged as nurses in the same institution from two to five and a half years, only one became consumptive.

"These figures are strikingly confirmed by those which come from the private sanitarium for consumption in Görbersdorf, Germany. Dr. Brehmer, who had been in charge of this large institution for twenty years, states that since the year 1854 more than 10,000 consumptives resided in the hospital, who daily walked the streets of the town and commingled with its inhabitants. The latter were, therefore, continually respiring an atmosphere which was more or less impregnated with tubercle bacilli emanating from the dried expectoration of these consumptive visitors, yet, in spite of these favorable conditions for contagion, it appears that the mortality from this disease is 50 per cent less among the Görbersdorf population since than it was before the establishment of the hospital.

"The same is true of Falkenstein, a town near Frankfort, Germany, in close proximity to which Dr. Dettweiler located a private sanitorium for consumptives in 1877. The health statistics of this place show that during twenty years previous to the establishment of the institution the death-rate from consumption among the Falkenstein inhabitants was 4.0 per 1,000 living, while for eighteen years since its existence the death-rate from this disease fell to 2.4 per 1,000 living inhabitants.

"Dr. Haupt, of Soden, a resort for consumptives in the south of Germany states that among the inhabitants of this town there are 101 individuals who let lodgings to consumptive visitors during the summer months. These patients are nursed and cared for chiefly by the inmates of the families—the work of

making the patients' beds, cleaning their rooms, beating the carpets, removing the expectoration, etc., being performed by female servants. During the winter months the rooms are reoccupied by members of the landlord's families. From 1855 to 1888—a period of thirty-three years—10 of the 238 members of the local families died from consumption, and five of the 415 servant girls died of the same disease, but in none of these instances, so far as could be ascertained, was the malady traceable to contagion.

"Dr. J. Adams, of Colorado Springs, Colorado, states that this place has been a health resort for about seventeen years, and comprises about 11,000 inhabitants, and that the majority of the rooms in the many boarding and lodging houses are and generally have been occupied by consumptives. After a diligent search throughout the whole city he only found a record of seven cases of consumption that originated among the local inhabitants during this time, and so far as could be found out none of these cases were specially exposed.

"Dr. P. Langerhans, who practised medicine for nine years in Madeira, an island which is visited every winter season by about 400 consumptives, observes that these invalids are lodged, boarded and in great part nursed by English colonists, varying from 210 to 250 in number, who live in about 100 houses. The rooms which are occupied by consumptives in the winter are reoccupied during the summer by the colonists' families, thus insuring the closest intermingling of the well with the sick. The health records of this island, which have been accurately kept since 1836, show that only four

of the English colonists died from consumption during this time, and that one of these suffered from the disease before he came on the island.

"The testimony which relates to the contagiousness of this disease between husband and wife is of a similar negative character. Dr. Schnyder, of Switzerland, gives a record of 844 cases of consumption occurring among married people. In 445 of these the husband only, and in 367 the wife only, was consumptive, while in 32 instances both husband and wife were affected, showing that in 812 of these cases there was no proof of contagion. Dr. Schnyder furthermore says that four of the thirty cases came to him fresh from the matrimonial altar affected with the first signs of consumption, and he believes that in spite of all warnings young people are frequently married while suffering from this disease. Out of 1,000 phthisical patients Cotton met with 11, 7 men and 4 women, who had previously lost a husband or a wife from this disease. Reginald Thompson, out of 15,000 consumptives, records 15 cases in which wives had been apparently infected from their husbands. Out of 6,167 patients the second report of the Brompton Hospital for Consumption (1863) gives 239 widowed persons, 83 males and 156 females, who had previously lost a husband or wife from phthisis; i. e., 1.7 per cent. Dr. Austin Flint contributes the history of 670 cases of consumption affecting husbands and wives, and among these there were only five in which a suspicion existed that the disease might have been contracted from one or the other; but it is certain, he says, that the instances in which

transmissibility may be suspected can also be accounted for as coincidences in a disease which is so widespread as consumption.

"THE OPINIONS OF AUTHORS OF TREATISES ON PULMONARY CONSUMPTION REGARDING THE CONTAGIOUSNESS OF THIS DISEASE.

"In this connection it is of interest to know the conclusions which those have reached on the question of contagion who have made phthisis a life-long study, who have written special treatises on this disease, and who are, therefore, entitled to an authoritative opinion on this subject. Laennec, in his illustrious work, says: 'We frequently observe, among the poorer classes, a numerous family sleeping in the same apartment with a consumptive patient, and a husband occupying, to the last, the same bed with his wife without any communication of the disease. The woolen apparel and the beds of consumptive subjects, which it is the custom to burn in some countries, are not even generally washed, much less destroyed, in France, and yet I have never seen the disease communicated by them.' Portal says that he was brought up in the contagious belief but abandoned it. Ancell believes that 'the doctrine of contagion has at all times been based on very vague and insufficient evidence, such as isolated cases of the occurrence of the disease in individuals who had previously been in constant attendance upon the sick, or in husbands or wives, where both had slept in the same bed until the fatal termination of the disease in the one first affected. In appealing to these facts as

evidence of contagion no account is taken of the anti-hygienic influences to which the individuals had been subjected or of the probability of a common or independent source of hereditary transmission or of the predisposition or the actual disease acquired previously. Against the few facts which tend to support the doctrine of contagion there are tens of thousands against it.' Dr. Aufrecht, after referring somewhat extensively to the contagion theory, says: * * * 'and less justifiable are the reckless conclusions drawn by Koch concerning the etiological indication of the tubercle bacillus.' Dr. Dettweiler writes of the freedom from phthisis of those who are engaged in the care of the phthisical in hospitals, and then says: 'My own fourteen years' experience in hospitals for consumption is in perfect accord with this.' The late Dr. Hermann Brehmer, the founder of the large and world-renowned hospital for consumptives in Görbersdorf, Germany, and who has done so much to place the treatment of consumption on a scientific basis, opposed the contagion theory of this disease most strenuously. Dr. Arthur Ransome declares that 'at the present time the dread of infection from consumptive persons is out of all proportion to the danger, and goes far beyond what the facts of the case justify. In its results this alarm is likely to cause much injustice to many poor invalids, and in some cases to endanger their prospects of cure. The sites for consumption hospitals are becoming as difficult to find as those for smallpox hospitals, and utterly unfounded reports as to the spread of phthisis by such institutions are recklessly

made, even by medical officers of health.' On page 31, in continuation of the same subject, he says: 'I have never yet found any satisfactory proof of infection, direct or indirect, in any well ventilated house in this country, and this in spite of close contact, as in the attendance of a wife upon her husband or in the nursing and sleeping together of near relatives and friends.' The late Dr. James R. Leaming uses the following example to illustrate the false notion of tubercular contagion: 'A mother, after watching her children, three or four in number, through scarlatina of a severe type, began to cough, lose weight and finally died of phthisis. She was well when the children were taken ill; she was a loving, anxious mother, and as they were attacked successively the time of her anxiety was prolonged. The children all recovered, but the mother was sacrificed. She was not aware of having taken cold. The cough was so insidious that no one could tell when it commenced. Had there been the same prolonged anxiety over a case of phthisis, followed by inconsolable despair at the loss of the loved one, it would have seemed to prove the communicability of consumption.' Dr. Alexander James makes the statement that 'many examples of contagion, real or apparent, have, of course, been brought forward, but the records of consumption hospitals and the fact that one often sees in a general hospital a phthisical case with numerous bacilli in his sputum, having alongside of him patients with fibroid, bronchiectatic or syphilitic disease, and yet in whose sputum or lungs no trace of bacilli can be discovered, seem incompatible with a belief in con-

tagion.' Dr. Douglass Powell says: 'My own personal experience and observation convince me that, apart from artificial conditions—such as those brought about by experiment—and in the ordinary circumstances of life, phthisis is not an infectious malady.' Dr. Wilson Fox clearly condenses his views, as follows: 'There are few writers who have not admitted the possibility of some contagion, but I venture to think that the evidence, as it stands, shows that even if this possibility has an authentic foundation the extent and degree to which contagion ordinarily extends are singularly small.' Dr. Theodore Williams declares: 'My own experience is that for the last twenty years I have carefully watched for cases of infection in hospital and private practice, and though I have come across a certain number of apparent cases they have never stood the test of close inquiry, there being always some additional element to explain the causation of disease.'

"THE MEANS OF PREVENTION THAT HAVE BEEN INVOKED IN THE PAST BY THE CONTAGION DOCTRINE.

"It is doubtful whether the history of any medical idea is invested with more curiosity and interest than that which hangs over that of the contagiousness of phthisis. The doctrine is a very old one—dating back to Aristotle's time—but in the last quarter of the eighteenth century it had gathered such force and importance in some of the Italian states that stringent laws were passed concerning the disinfection of the rooms in which consumptives died, and of the clothes which they had

worn. In 1754 the Grand Duke of Tuscany, being imbued with the truthfulness of the contagious doctrine of phthisis, addressed the College of Physicians of Florence on this subject, but the latter, not being able to view the question in the same light, made a negative report on it. In spite of this action an ordinance was passed by the government making it compulsory on all medical practitioners to report, under the penalty of a fine of 100 scudi, every case of 'true confirmed phthisis' to the Health Tribunal in Florence, and to the governor, commissioners and magistrates having criminal jurisdiction in the other provinces. In every case of this kind the magistrate ordered an exact inventory of all articles in the patient's room, or used by him, so that a thorough disinfection could be made in case of death. After the consumptive's death those who had taken care of him, and those who had charge of his clothes, were compelled to report themselves to the proper authority. The owners of houses inhabited by phthisical patients were not allowed to eject them, because such action might render them homeless and wanderers, and facilitate the spread of the disease. The heirs of consumptives were forbidden to sell anything that had been used in their illness for a month after their death. Patients were enjoined to expectorate only in special vessels of glass or glazed earthenware, which were to be emptied and cleaned frequently. These laws were strictly enforced for thirty-nine years—until 1783—when, on account of a want of support on the part of the medical profession, they were repealed by the Grand

Duke, Pietro Leopoldo, as being 'a cause of bitterness, dissatisfaction and vexation.'

"In 1767 the State of Lucca passed similar laws, in which the rules for cleansing and disinfection that had to be adopted in cases of death from phthisis were set forth in minutest detail.

"In 1772 the Guardians of the Public Health of Pesaro asked the corresponding officials at Venice for advice concerning the disposal of the clothes of persons who had died of phthisis. The latter referred this question to their Protomedico, Giambattista Paitoni, and he replied in a monograph in which he held that in the course of a long experience he had seen many evil effects from the neglect of necessary precautions 'to protect one against a disease of such a nature.' He recommended that all things used by consumptives should be dealt with in the same manner as in the case of 'contagious pestilential influences.' He laid special stress on the importance of taking care that the clothes of a consumptive should not fall into the hands of 'filthy and miserly second-hand dealers, who then sell them again with impunity, thus trafficking in the health of men.'

"On the strength of the opinion of health officers the Venetian government issued an ordinance, December 24, 1772, to the effect that no one in any part of Venetian territory should, 'under any pretext whatever sell, or in any way part with or dispose of, receive or purchase clothes or other effects, which had been used by persons suffering from phthisis, unless they had first

been properly disinfected. Breach of this regulation was punishable by death, imprisonment, or the galleys. Medical practitioners were compelled to notify all cases of death from phthisis so that the sanitary officer might give the necessary orders. For greater security secret notifications were received, and those giving information, authenticated with their names, to the authorities were rewarded.'

"On August 19, 1772, the Sacra Consulta of Rome issued a circular to all the Papal States urging them to exercise the most vigilant care to prevent the sale of clothing belonging to persons who had died of that 'pernicious communicable disease' (phthisis). 'Medical practitioners were enjoined to notify all deaths from this cause, and to draw up an inventory of the things which had been used by the deceased. It was expressly directed that for this inventory no charge should be made, and it was further provided that if it was found advisable to burn any part of the belongings of the dead, and a poor family was thus deprived of things needful for domestic purposes, limited compensation should be made.'

" 'At Bologna, the second city of the Papal States, an ordinance was issued in 1773 in which a further provision was made to that of the Sacra Consulta of Rome. By this the introduction of clothes, linen or other things used by consumptive persons into the city or its suburbs from any other region, without an official certificate of disinfection, was strictly forbidden. Not only physicians and surgeons, but parish priests were bound to notify cases of death from phthisis, in order that the

authorities might see that disinfection was carried out. Three years later the scope of the ordinance was extended so as to make the notification of illness compulsory as well as those of death. Secret notifications were received, and half the fine imposed for breach of ordinance was assigned to the informer. The physicians of Bologna appear to have treated the ordinance with scant respect, and the Cardinal Legate accordingly threatened to proceed against them. They, therefore, selected two of their body to draw up a memorial setting forth the grounds of their disbelief in the contagiousness of phthisis. * * * The authorities, however, stood firm.'

"In 1782 most stringent laws for disinfecting the belongings of the phthisical were introduced into the kingdom of Naples by Ferdinand IV, and which were maintained for more than fifty years. The penalties for non-observance of the regulations were extremely severe. For interfering with the sanitary officers in the discharge of their duty 'ignoble' persons were punished with three years of the galleys or prison; 'nobles' by three years' confinement in a fortress and a fine of 300 ducats. Physicians received a similar fine for the first offense and ten years' banishment for the second. 'Purchasers of infected clothing were punished by three years of the galleys, while those who sold them were fined three times the value of the articles sold.' In every case the ceilings, walls, floors, doors and windows of rooms in which consumptives died were torn out and burned, and new ones were substituted. The bedding and furniture shared the same fate, and such dwellings

were not inhabitable for one year. If owners rented such houses before the expiration of the prescribed time they were imprisoned for three years and the tenants were exiled. All the phthisical patients were forced to enter the hospital for incurables in Naples, and were detained there until they were either cured or dead. The family with phthisis in its midst was shunned and driven to want, and houses in which consumptives died came into disrepute and many of their owners were turned into beggars.

"Laws of a similar character were introduced and enforced in certain parts of Spain and Portugal.

"That which is of the greatest interest to us here is as to the practical benefit which followed the introduction of these draconic measures. According to Uffelmann, Dr. de Renzi, the historian of Italian medicine, states that the injury which had been inflicted on Naples by these laws was simply indescribable, and he denounces the Neapolitan medical faculty in the severest terms for participating in their practical introduction. Among other things Dr. A. L. Pierson wrote of a Neapolitan hospital, in 1834, as follows: 'One can hardly realize that so much has been said and written to recommend this city as a residence for consumptives, when some of the best informed Neapolitan physicians estimate the deaths from consumption among the residents at one-fourth of the whole mortality.' One of the most reliable medical publications in the English language states that Drs. Spattuzzi and Somma have paid great attention to the mortuary returns in the City of Naples (about 1866), and affirm that one-sixth of

the whole mortality is due to phthisis; and Dr. de Renzi marvels greatly, in 1863, that the City of Naples is fully as much liable to this disease as either London or Paris, though the salutary condition of the climate should render it far less common.

"It seems, therefore, if the death-rate from consumption was the same in Naples at the time these laws were abolished as it was in other cities in which segregation (isolation) was never practised, that the practical value of such measures was entirely negative." —worthless.

Again, a prominent bacteriologist stated in Detroit recently, "It is usually held that tubercular sputum dried, pulverized, and floating in the air, is the most important source of infection." Again, "The attempt to affect guinea pigs, animals I would say a hundred times as susceptible to the inoculated germ as man is, by making them breathe air suspensions of dried tubercular germs has usually failed, after being tried by many investigators."

First, he says the dried sputum floating in the air is the most common source of infection. Next he says that guinea pigs cannot be so infected, although they are one hundred times as susceptible as man. He says, "I have never seen a guinea pig with a self acquired tuberculosis."

All health boards and bacteriologists claim that dried sputum floating through the air is the most common source of tubercular infection. Is it? Flugg says, "As a result of a long series of experiments made by himself and his pupils during the last two years, he con-

cludes that the danger of infection from the dried sputum is small."

"Cornet has shown that among street-sweepers who follow the business for many years, tuberculosis is less common than among other classes." The cities are where the largest number of people expectorate upon the streets and sidewalks, and those sweeping and cleaning such thoroughfares would be subject to more danger, if any existed, than any other class of people on earth, yet the professor says, "tuberculosis is less common with these people." The professor closes by saying, "According to the Registrar General the death-rate from consumption in England and Wales was in 1838 thirty-eight per ten thousand of the population. In 1895 it was fourteen."

"Note that during this period of fifty-seven years the population had more than doubled, while the facilities for travel and comingling of sick and well had been at least quadrupled, that during the larger part of this time no attention whatever had been given to the thought of contagion, no isolation, no destruction of sputum, or any such precautions; that despite the fact that the possibilities for infection had been increased many fold, the disease had decreased."

Colorado Springs is a great resort for consumptives, and there are enough germs distributed around this place to infect the population of the entire earth, yet the disease is seldom, if ever, acquired there.

An article in the *Physician and Surgeon* for November, 1899, states: "There is no doubt that the germs of consumption are with us always; they are universally

distributed wherever man lives upon this earth. I believe that practically we come in contact with them daily."

Experiments with the consumptive germs are usually made with guinea pigs, yet guinea pigs can be rendered tubercular as well without the consumptive germ as with it. They can be rendered tubercular by inoculating them with vaccine lymph, putrid muscles, or by introducing a clean seaton of unbleached cotton, or even by giving them a brisk pinch in the flank. These statements are supported by many leading authorities. Green's Pathology, page 364, states: "That tuberculosis may be produced in animals by the irritation of vaccine, bits of cork or paper. Doctor Evans states that by making incisions in pigs, they afterwards perished of abscess at the seat of injury, and miliary tuberculosis in their various organs."

Now apply the teaching of health boards and other bacteriologists.

The Philadelphia Board of Health states that "all cases of tuberculosis of the lungs take origin directly or indirectly from other cases. This is now an established fact."

The New York Board of Health states that "consumption is a disease of the lungs which is taken from others, and is caused by germs."

The Michigan Board of Health states that "consumption is a dangerous communicable disease, and is caused by germs."

In the *Physician and Surgeon* for November, 1899. is an article stating: "There is no longer any dispute

as to the cause of consumption. Scientists are agreed that the consumptive germ is the ultimate cause of all so called tubercular processes."

Have the health boards stated the case fairly, or have we clearly shown by some of the greatest living authorities that such statements are not true? Since the germ theory has become so popular, a leading medical college has made the remarkable discovery that it requires seventeen consumption germs to produce the disease in a healthy subject.

In a healthy subject! And so germs can produce disease in a healthy subject, yet the population of the United States has increased from the first settlement in Virginia from one hundred to about ninety millions at the present time. Instead of advertising themselves through the newspapers and by circular; instead of trying to pass laws compelling people to submit to quarantine regulations, or placing the consumptive in some hospital already filled with those whose pallid faces, hollow cough, wasted bodies and ghastly looks meet you on every hand, a place where each patient drags out his remaining days in one long nightmare of despondency and disgust. Instead of doing this, why don't the bacteriologists come out squarely and honestly and cure just one case of consumption? If they could cure consumption there would be no need of laws compelling people to accept their treatment, for all who suffer with the disease would go willingly and gladly. The people who would be brought under the influence of quarantine had better secure an appropriation for educating the people in that particular com-

munity or state. A contagious disease is one that spreads rapidly, develops in a few days, becomes serious and often fatal. Consumption requires months and usually years to develop, and this fact alone is sufficient to oppose all thought of contagion, quarantine and isolation.

The theory of contagion is but the dwarfed and mangled conclusions of laboratory science.

TYPHOID FEVER.

A student was called before his class to examine a case of suspected typhoid fever. The student was somewhat embarrassed, and this may have accounted for the somewhat remarkable diagnosis, which ran as follows:

Case one (this was his first case). Irish parents age 24 not hereditary, brunette tongue, coated and accustomed to working out by the day. Was suddenly seized with vertigo of the head in the occiput near the post-office, no temperature though inward fever, other functions normal. Case diagnosed as dramatic sprain of the main leader of the left leg. The young man wrote the following prescription on the blackboard. Cranberry poultice, veratroidine and milk diet to the affected part. The strain was too much, and the next day the professor said the student himself was threatened with typhoid fever, because he had heard him talking in his sleep, and at times singing national airs so familiar to all. The writer was once discharged because he would not give something for this particular feature of a case (singing), but it seemed to him then and does now that if, as claimed by many, Key really wrote the "Star Spangled Banner" on the head of a barrel, the patient had a right to whoop 'er up if he wanted to. The professor thought the student was

talking about his relatives, because he frequently spoke of his "Ante," also of "Jack-pot" (thought Jack was his cousin), heard him say he must "stand pat" (another cousin). The professor thought these three relatives were what the student referred to when he spoke of "three of a kind;" he thought the student was a very kind-hearted boy, because he heard him say he gave his overcoat to his "uncle," and went back after "Tom and Jerry."

We understand that the foregoing does not bear a very close relation to typhoid fever, yet we believe it is about as near correct as many of the cases that are diagnosed typhoid. The writer understands that he may be criticised for not accepting the usual diagnoses, yet he is satisfied that in many cases, perhaps the majority, such diagnosis is not correct. This conclusion is reached after the usual experiences with cases of this kind, and after proving over and over again that such cases usually make a complete recovery in a few days, if eliminations have been thorough, and followed when necessary by antiseptics and stringents.

In his practice of medicine, page 23, the well-known Dr. Hughes says, regarding typhoid fever: "An error that is constantly being made is that of confounding typhoid fever with the typhoid (depressing) symptoms or conditions developing during the course of many acute diseases."

We understand that some physicians will have no patience with the statement that they do not know a case of typhoid fever when they see it, yet the very nature of typhoid fever renders a diagnosis ex-

tremely difficult. That is the reason the bacteriologists established the Widal test. They claim the disease is caused by a germ, yet it is well known that in one-half of the cases they are unable to find any trace of their germs, and having no other satisfactory means of deciding, they established the Widal test, called the Widal because Mr. Widal first wrote an article calling attention to its importance. Yet the test possesses but little value. As there is much difference of opinion regarding typhoid fever, let us take an imaginary case: Is it typhoid fever? Sometimes that is merely a matter of opinion, and each physician may hold a different view. A few years ago the writer was acquainted with a doctor who had twenty-one cases of typhoid fever(?) on his hands all at one time. That was pretty hard on the doctor, though the patients bore up well, as all recovered. Other physicians in the same community did not have any typhoid patients at this time. If a typhoid patient lives until the end of the second week there will be ulceration along the digestive tract. There may be ulceration without typhoid. The mucous membrane lining the digestive tract contains many small glands or follicles. These are small thimble-shaped depressions, and during inflammation these follicles become enlarged as the swelling and pressure prevent the discharge of their contents. The swelling and pressure also interfere with the circulation, degenative changes follow from a lack of nourishment, portions of the mucous membrane slough off, and thus ulcers are formed. Not only ulcers, but gangrene may occur if the inflammation is severe enough, yet in each

of these cases typhoid fever would be absent. With typhoid fever there is bloating and soreness along the digestive tract, yet everyone understands that bloating and soreness can and usually do occur without typhoid. Can constipation exist during typhoid? Some physicians say it can, some say it cannot, yet neither verdict is of importance, since either constipation or diarrhea may and usually does occur without typhoid. Some doctors consider diarrhea marked evidence of typhoid fever when occurring with other symptoms, yet there may be typhoid symptoms with diarrhea, and no typhoid. Because first, there may be constipation; this may and usually does produce all the symptoms of typhoid fever. The constipation allows fermentation to take place in the digestive tract; this causes irritation which may stimulate increased activity and result in diarrhea; or the morbid effects of constipation may cause paralysis of the nerves supplying the arteries along the digestive tract; this would allow the arteries to dilate and discharge large quantities of water, which would cause diarrhea of a typical typhoid variety, yet there would be no typhoid. The word typhoid means stupor, therefore, strictly speaking, any condition of stupor where fever is present may be called typhoid, and some doctors do apply the term to many low conditions where fever is present. Bacteriologists claim that typhoid fever is caused by a certain specific germ, yet all the symptoms and even the ulceration may occur without their germ. Suppose the bacteriologist is called and he pronounces the case typhoid fever, and to make assurance doubly sure, he takes his microscope

and finds the so called typhoid germ. Does that prove it is typhoid, or that it was caused by a germ? No, bacteriology itself proves that germs do not cause typhoid fever, for they tell us that the germ is only present in one-half the number of cases, even their leader, Dr. Koch, is only able to find the germ in fifty per cent of cases.

Bacteriologists know this to be true. Green's Pathology, page 326, states that the great germ-theorist, Koch, "demonstrated the presence of the germ in one-half the cases examined by him." The same page states: "A very important paper by Gaffky appeared in 1884. He started with the observation that the germ had been found in only one-half the cases examined."

What caused the disease in the other half? Bacteriologists give the following definition of doubtful cases, in fact it is taught by bacteriologists in one of the leading medical colleges: "An infectious disease is one in which a pathogenic germ enters the body; germs grow, multiply and produce poisons which directly cause disease, hence no disease is infectious that is not a germ-disease, therefore every infectious disease points directly to a germ, whether the germ has been found or not."

Does this prove that disease is caused by a germ?

Wm. F. Waugh, A. M., M. D., known at home and abroad for his penetration of thought and practical knowledge, says in his "Treatment of the Sick," page 417: "Ordinarily the inoculation of animals with the typhoid germ fails to produce an analogous disease."

In other words, inject the germ into the body and there will be no result.

Evidently the bacteriologists are not satisfied with their definition of disease, and after much labor have prepared the Widal test. Knowing that some consider this test of little value, and to aid in arriving at the truth, the author addressed six letters to six leading bacteriologists, inquiring wherein the test is weak. The answers contain the following quotations: One says: "The test must be made at a certain time, or no Widal reaction will take place." Another says: "The Widal reaction is weak because its characteristic reaction is not produced until late in the disease, generally from the tenth to the twelfth day." Another says: "The value of the Widal test is disputed by some, for the reason that the blood of patients other than typhoid gives the same reaction, unless certain precautions are taken." The foregoing answers were included in personal letters.

The New York Board of Health replied by printed circular, from which the following quotations are taken:

"The blood of persons suffering from or having recently had typhoid fever, contains, as a rule, after the fifth day of the disease, certain substances, etc." The circular also states that: "It has been shown that occasionally the blood of persons suffering from other diseases possesses this peculiar property." Again the circular states: "These substances are also occasionally present in small amounts in other diseases and even in health." Again, "If the blood contains the

substance in sufficient amount to cause prompt and marked reaction, the presence of a previous or existing typhoid infection may be considered extremely probable." Other requirements are named and the circular states, if these are met: "The presence of a previous or existing typhoid infection may, for diagnostic purposes, be practically considered as established." The circular also states: "The reaction is occasionally absent in cases of typhoid fever until the third or fourth week, or even until convalescence is established."

"Four weeks, or until convalescence!" It might be interesting to know at what time convalescence makes it appearance in those cases treated by the New York Board of Health.

In another place the circular states: "In those cases in which the reaction is absent after the ninth day, it may be reasonably assumed that the large majority will not prove to be typhoid fever."

In a paper by Dr. D. Murray Cowie, read before the Ann Arbor Medical Club (Michigan), September 13, 1899, the author understands Dr. Cowie to say, that the Widal reaction may occur thirty-seven years after recovery from typhoid fever.

On the New York circular there is printed in large type: "Circular of information." Is it? It says "as a rule" the blood of typhoid patients between the fifth day and the third or fourth week, or until convalescence, contains a certain substance which gives the Widal test. It also says the blood of persons suffering from other diseases, and even those in health, may possess the same properties as that of the typhoid fever patient. Again,

"It is extremely probable," or "the presence of a previous or existing typhoid infection may, for diagnostic purposes, be practically considered as established." "May be reasonably assumed," so and so. Dr. Cowie's paper says thirty-seven years after the disease.

If obliged to depend on the Widal test, can the bacteriologists decide whether a suspected case is or is not typhoid fever? It would seem as though Mrs. Mary Moss Baker Glover Patterson G. Eddy was correct when she said: "The nothingness of nothing is plain."

What a contrast it would be for bacteriology to make a clear positive statement, just one. Something it has never yet done. Why? Simply because they are dealing with theory. Admitting that there may be some value in the Widal test, the fact still remains that the test or reaction does not generally take place until about two weeks after the disease is established. Who is satisfied to wait two weeks?

If elimination has been thorough and antiseptics have been given in sufficiently large doses, in most cases prompt recovery will follow in a few days. The writer knows this from experience. The reason is that in most cases typhoid is not present, and if it were, the above treatment, with proper hygienic surroundings, would cut most cases short.

Take a case of genuine typhoid fever, the bacteriologist takes a drop of water from the well, places it under the microscope, and finds it loaded with germs. Does that prove the germs caused the disease? No; it only proves that the water was full of decomposing matter which furnished a medium or food upon which germs

could thrive. It was such decomposing material generated within the patient that poisoned the system and produced the disease.

Collins H. Johnson, B. A., M. D., bacteriologist and member of the Michigan State Board of Health, says in a recent published letter: "Many epidemics of typhoid fever, due to the domestic use of polluted water, are now on record, and while typhoid germs have rarely been discovered in such water, the fact of the transmission of the disease in this manner is absolutely conclusive." Is such a statement probably true, or does it contradict itself? Dr. Johnson next speaks of the manner of proving the presence of the germ in suspected water, and adds: "This is a tedious and difficult process and is not regularly carried out by any of the State Boards of Health of the various cities. In only a very few well authenticated instances have typhoid germs been isolated from contaminated water."

The bacteriologists tell us that epidemics of typhoid fever are caused by germs? Yes. That water is the medium by which the germs are carried into the system? Yes. That such germs have "rarely been discovered in such water?" Yes. That boards of health of the various cities seldom look for typhoid fever germs? Yes. And "in only a very few instances have typhoid germs been isolated from suspected water?" Yes. Yet "the facts of the transmission of the disease in this manner are absolutely conclusive?" Yes. Let a man give such conflicting evidence upon any other subject and he would be called insane. Such evidence will not carry

conviction, but such statements will hasten the day when the germ theories will be relegated to the past as they surely will be. Are there any morbid changes that are always present in typhoid? Yes; tenderness along the digestive tract, and ulceration of what are called Peyer's patches; yet, as already stated, tenderness may and usually does occur without typhoid, and ulceration of Peyer's patches can only be proven by a post mortem examination.

Scattered throughout the small bowel are numerous small glands. They are placed in the mucous membrane; have no excretory ducts, and their use is said to be unknown. Yet they undoubtedly aid in digestion, as they are largest or most developed during the digestive period. In places these glands are clustered together, forming little groups. These groups are called Peyer's patches, because first described by Dr. Peyer. There are from twenty to thirty of these groups, varying from one-half inch in width to three, four or more inches in length.

The mucous membrane covering them is highly vascular; i. e., abundantly supplied with blood vessels. The normal blood supply being greater than in the surrounding mucous membrane, the inflammation is more intense, therefore a good field for degenerative changes, ulceration, etc., and that is the reason ulceration occurs at these particular points.

Ulceration of Peyer's patches is understood by physicians everywhere to mean typhoid fever. Without such ulceration it is not typhoid fever. Post mortem

examinations would undoubtedly prove that the glands in question are not often invaded, and that but few cases of typhoid fever actually exist.

Can typhoid occur the second time? Not if all the glands are invaded by the first attack, because every gland that is invaded is destroyed and is not replaced, therefore there could be no second invasion. The glands are not often all invaded at one time.

If there has been a case of general sepsis or poisoning along the digestive tract, and it changes to typhoid; i. e., Peyer's patches become invaded, are there any signs or symptoms by which the doctor may know positively that such change has taken place? No, he can only judge from the mass of evidence. General intestinal sepsis can and does give all the symptoms of typhoid fever, and every doctor of experience understands that many cases of auto or self-infection, with a catarrhal condition of the stomach and digestive tract, and insufficient liver-action, may be and often are taken for typhoid fever. And some day people will wake up to the fact that typhoid fever depends upon intestinal sepsis that has existed for weeks and probably months before the disease gained a foothold. If this general septic condition is relieved there will be no disease.

The author knows from experience that the ordinary case of what may be called typhoid fever can be cured promptly by thorough elimination and disinfection. It is no more or less than a low form of fever which has been brought on by the gradual absorption of many poisons from the digestive tract. Or some of the poisons may have crept into the system from unhealthy

surroundings, as old cellars, decomposing vegetable matter, water containing decomposing matter, bad drainage, poor ventilation, etc. These conditions are responsible for many cases of prolonged sickness.

The patient may be pale, emaciated and weak, with more or less bloating and soreness along the digestive tract. In some cases the soreness or over sensitiveness is not confined to any particular part, but is present more or less in all parts of the body. All of these conditions are accompanied by a fever, and sometimes night-sweats.

The conditions just enumerated are not only the cause of typhoid fever, but of consumption also. There may be curvature of the spine caused by weak muscles, relaxed ligaments, and lying too long in one position.

In all of these conditions there is a low form of inflammation along the mucous membrane lining the digestive tract, and if the inflammation is severe enough there will be degenerative changes in Peyer's glands. It has been stated that when Peyer's glands are invaded they are destroyed, and that when they are all destroyed typhoid fever cannot occur again. That is true, yet the same unhealthy condition may occur again, and each time the symptoms of typhoid fever will be present.

If the digestive tract was kept in a healthy condition typhoid fever would be a thing unknown. So would nearly all other forms of disease, for the primary cause is indigestion, followed by a lack of nourishment, a lowering of the vital forces, the gradual accumulation of poisons in the system, etc.

Is typhoid fever catching? A man eats too much or too fast, works too hard or not enough, or indulges in some form of excess; digestion is interfered with, elimination is checked, degenerative changes follow, the system becomes saturated with self-generated poisons, vitality is lowered, the powers of resistance are reduced to a minimum, the septic blood courses through the body producing irritation and inflammation; disease follows. It may be located in the digestive tract as in typhoid fever, in the lungs as in consumption, in the liver, kidneys, heart, brain or elsewhere.

Typhoid fever is not catching, but depends upon a long train of the conditions just enumerated. The patient has overstepped the limit of safety and now nature is demanding her rights. First, digestion was poor from some cause, the blood contained many impurities, so did the digestive tract, and gradually the system was brought under the influence of putrefactive changes. The nervous system became more or less paralyzed. Sometimes one kind of poison is generated and sometimes another, according to the surroundings, kind of food taken, etc., and by reason of the different poisons, it follows that sometimes one organ is affected and sometimes another.

The same is true with other poisons, strychnine, morphine, aconite, etc., used in medicine. First, there is congestion, then inflammation, and if severe enough some cells or tissues die from lack of nourishment, if in the lungs it is consumption, if in the kidneys it is Bright's disease, if in the liver it is liver abscess, if in the digestive tract it may be in Peyer's patches as

in typhoid fever, or abscess of the appendix as in appendicitis.

What have germs had to do with producing these diseases? Nothing; absolutely nothing. After disease is established germs are present, of course. This is according to a universal law. Wherever there is dead tissue, or any other form of dead matter, germs are always present to reduce it to simpler forms—to separate the elements or component parts and give them back to nature, thus permitting them to aid in the formation of something new.

As stated elsewhere, it is by this plan the Divine Intelligence carries on the world's economy. Everyone understands that the dead support the living, but first the elements of the dead must be separated and given back to nature's laboratory. This change is called fermentation or putrefaction, and can only take place with the aid of a ferment. Nature has designed that germs shall act as the ferment, hence their universal presence. Earth, air and water are swarming with them, and during disease they also inhabit that part of the system that is affected.

Pepsin of the stomach digests albumin; i. e., converts into other substances. So also when tissue is destroyed by disease, the presence of germs converts such tissue into other substances, some into gases, some into pus. This aids in elimination and in relieving the system. Could not the dead tissue have been removed without the presence of germs? No. Even the bacteriologists teach this, as shown by the following words, found on page 270, Green's Pathology: "All the pro-

cesses comprised in the terms fermentation and putrefaction are due to the action of vegetable organisms."

The results just described are perfectly natural. Thousands of times before, germs have been present in this same system, but there was no disease, and the germs were promptly destroyed by the fluids of the stomach or other secretions of the body; and, even when typhoid fever is present the fluids of the stomach may still destroy the so called typhoid germ, and that is the reason there are so many cases of typhoid fever where this particular germ is absent.

That is the reason Koch, Gaffky and others mentioned can find the germ in only one-half the cases they examine. There were other germs present, however, and they decomposed the dead tissue and formed the ulcers in Peyer's glands.

Self-infection from the digestive tract may give the symptoms of typhoid fever so closely that it is impossible to decide, yet sometimes we meet those who, upon entering the house, and before seeing the patient, exclaim: "Typhoid fever!" In the minds of some this is an exhibition of remarkable intelligence. After that it is typhoid fever, of course, and the case is treated accordingly.

Say to a man: You look sick. You are threatened with nervous prostration, or: You are going to have a run of the fever, and you may have a very sick patient on your hands. That is blind submission, and causes bodily suffering or increases it, by admitting its reality. Instruct the same patient to meet the ap-

proaching symptoms with all the strength of intelligent manhood and note the contrast.

"Had Blondin thought it impossible to walk a rope over Niagara's abyss of waters, he could not have done it; his belief gave him the victory."

The doctor who tells the plain unvarnished truth will often lose his patient, because people like to be humored in their ideas of sickness. That is true, yet it is not necessary to say to a man: "You have typhoid fever and must lie here four weeks," or "until convalescence;" neither is it necessary to surround yourself with an air of superior(?) knowledge, by saying that this disease is caused by the fundamental thesis of the chemical products of dissociation which combine to operate against the organic functions. This overbalances the conditions of the organic membrane, in proportion to the osmotic fluids of the body and disease follows. If the hydrolitic effects of the inverting enzyms upon the carbohydrates now in the system, aid in supporting the patient until the physiological relations between the two are equalized, then the intra-organic oxydation of the proteids will be absorbed by the semi-permeability of cell-protoplasm and recovery will follow.

The doctor is losing his usefulness when he fails to fully instruct the patient or others in such language as may be easily understood.

THE NON-CONTAGIOUS DISEASES.

Barring accident, injury or abnormal development, this form of disease is but the result of some disturbance of the digestive organs.

The different diseases are but different expressions of one cause, namely, auto or self-infection. I know there are many who do not agree with this statement, not yet, but gradually they are being converted to reason and better judgment. Gradually the theorist is letting go some of his faith in germs and accepting a more reasonable teaching.

The human system produces enough poison in twenty-four to thirty-six hours to destroy life if it were retained in the body. This poison is the natural waste and worn-out matter which in health is eliminated and replaced by the food that we eat. Diseases are caused by alcohol or tobacco, by improper food, by rapid eating, by eating and drinking too much, by too much strong tea and coffee, by late suppers, by irregular and careless habits, by decayed teeth, by a lack of exercise and fresh air, by too much hard work, by laziness, by exposure, by improper clothing, or by some form of excess.

All realize the importance of eating, but the necessity of equal elimination is but imperfectly appreciated.

So long as waste and repair are equal, and the waste

is eliminated as fast as produced, health is the result; but when the equilibrium is disturbed, disease is the result. It is understood, of course, that there may be a natural increase, or decrease; i. e., should a man commence the blacksmith's or the carpenter's trade, there would be an increase in the size of the muscles of the arm using the hammer or the saw; should he change his occupation there might be a decrease in the size of the same muscles. In the first instance there would be an excess of growth over waste, and in the second an excess of waste over growth, yet neither would indicate disease.

When the blood is poor and the circulation sluggish, the little cells and tissues of the body lose their vitality from a lack of nourishment, and it is this condition that opens the door to disease.

It is estimated that the network of blood vessels which envelop the body, and which lie just beneath the skin, are capable of holding one-half the blood in the system. This is evidence that nature has designed free peripheral circulation.

In health the average amount eliminated through the skin is about twenty-four ounces in twenty-four hours. This watery exudate contains from two to four per cent of solid matter. Should a part of this be retained in the system, it would act as an irritant or poison, and produce a low form of inflammation or disease. Should all be retained it would produce death.

Cold stimulates the nerves supplying the sweat-glands and the peripheral vessels, and they contract. This locks up the secretions and causes congestion of the

internal organs, and digestion is interfered with. This increases the waste and irritating substances. This condition usually results from improper food, rapid eating, etc., as already stated.

Elimination relieves congestion and inflammation, causes free circulation, flushes the capillaries or small blood vessels, carries away waste, restores normal resistance to external influences, and thus wards off disease.

Digestion, assimilation and elimination, are the foundation stones of life and health.

Disease is an indication that waste and poisonous matter is retained in the system and must be removed before permanent improvement can be hoped for. If two pounds of food are taken into the system, two pounds of waste must be eliminated, or the health will suffer.

When elimination is checked, the waste blocks the circulation, causing congestion, first in those organs doing the most work, because they produce the most waste. With poor digestion, faulty elimination, and a lack of nourishment which must follow, the whole system is weakened and depressed, and there may result chronic bronchitis, pneumonia, consumption, rheumatism, disease of the heart, brain and spinal cord, Bright's disease, or any other ailment. Some being liable to one and some to another, according to their several powers of resistance.

Dyspepsia is usually accompanied by constipation. Following this comes degenerative changes in the digestive tract and the production of poisons, some of which

enter the circulation, and gradually the individual is overcome. The nervous system is bathed with impurities and loses its sensitiveness and power to control, the brain becomes clouded and dull, a sense of languor and indisposition pervades the whole being, the activity of the tissues or cells is diminished, their power to select nourishment is lessened, the blood lacks the normal elements, and the most shattered state of the vital forces exists. Ambition and energy are gone, and that "tired feeling," so dear to the patent-medicine shark, takes possession. This condition may exist for months in a mild form, the individual keeping about his work, or may explode suddenly, producing great prostration.

The trouble usually commences in the stomach. The irritation paralyzes more or less the delicate nerves supplying the blood vessels. They lose control, the vessels dilate and too much blood is the result. The mucous membrane lining the stomach is thickened and swollen, the digestive fluid becomes changed in quality, it lacks the digestive power, and the secretions become thick and tenacious, the result of catarrh of the stomach.

The septic condition of the digestive tract may result in appendicitis, typhoid fever, or peritonitis. It may cause chronic catarrh, tuberculosis, or cancer of the stomach. Tuberculosis of the digestive tract in adults rarely occurs unless other parts of the body are invaded first.

In nearly all cases of fatal chronic diseases of the heart, brain, lungs, kidneys, rheumatism, etc., we are told that a careful examination of the mucous mem-

brane of the digestive tract will show numerous traces of disease, inflammatory thickening and ulceration. In many instances the mucous membrane of the stomach is found detached, leaving the inner surface of the organ raw and granular. Many of the glands that furnish the digestive fluids are narrowed or destroyed. The ducts which convey the bile and pancreatic fluids are often contracted and thickened. This prevents, more or less, the flow of these fluids, and digestion suffers in proportion.

In health the higher forms of digestion are carried on in the circulation, but with the condition described such digestive changes do not take place, or rather the change in the digestive organs and fluids permits an ever-increasing amount of waste to enter the circulation, and these irritating substances result in a low form of inflammation.

The bile-duct opens into the digestive tract three and one-half inches below the stomach. During congestion or chronic inflammation from septic blood, this duct may become closed, obstructing the flow of bile, which now seeks other means of escape, some passing out through the skin, producing its characteristic color called jaundice. This condition is also indicated by a bitter taste in the mouth.

With fermentation in the stomach the taste is sour, because the stomach produces acids.

The return circulation from the digestive tract passes through the liver, hence any poisons resulting from poor digestion are carried direct to this organ, and re-

sult in inflammation and enlargement, or may be followed by liver abscess, fatty degeneration, cancer, etc. The kidneys are small organs, yet they contain a comparatively large amount of blood, hence poor digestion and a disordered system may produce a low form of inflammation and Bright's disease.

Passing through the circulatory system the septic blood affects the arteries, producing chronic inflammation. The arteries first thicken and then become soft and flabby, the result of degenerative changes. The arteries lose their elasticity, and there results a lack of nourishment in the tissues or organs supplied by the diseased vessels, or the vessels may rupture. The small arteries are most liable to rupture, as they are thinner and more easily destroyed. A blood-clot may form at the point and prevent hemorrhage. This clot is called a thrombus. It would stop the circulation, and the part or tissues supplied by this artery would lack nourishment, degenerate and soften, or an abscess may form. If in the stomach it would cause ulcer. The diseased arteries may gradually narrow without a blood-clot until the nutrition is so far shut off that softening may occur.

Some of the changes in the arteries are naturally the result of old age, yet as a result of septic blood and a disordered system, they may be, and are frequently, met in the young and those of middle life. Any condition that interferes with digestion or lessens oxidation may produce fatty degeneration of the heart, kidneys, liver, brain or other organs.

Hiccough.

The diaphragm is a thin membrane which divides the chest from the abdominal cavity, and aids in respiration, rising and falling with each breath. The stomach is placed just beneath the diaphragm. The diaphragm passes obliquely backward and downward, hence it is not only above but partially behind the stomach.

During indigestion the stomach may become very irritable and sensitive. The constipation which follows causes bloating and pressure and this increases the trouble. The stomach is forced upwards and irritates the diaphragm.

The solar plexus is a large collection of nerves situated just behind the stomach. Irritation may be communicated through this bundle of nerves, as it receives branches from both the stomach and diaphragm. Any condition which stimulates the diaphragm may result in hiccough, as the mechanism of its production rests upon the contraction of the diaphragm downward. This is so sudden that it causes a vacuum in the chest. The outside air now attempts to rush into the lungs, but is prevented by the sudden closure of the glottis, the space between the vocal cords through which the air passes. This produces the peculiar sound known as hiccough.

Why does the glottis close at this time more than during ordinary breathing? Because the spasmodic action of the diaphragm against the stomach causes spasm of this organ also, and the same nerve which supplies the stomach supplies the vocal cords, hence

every spasm of the diaphragm being conveyed to the stomach is flashed over the nerve-fibers to the vocal cords and they contract, closing the space between them.

Hiccough usually stops without attention. Sometimes the trouble is persistent and is said to cause death. Hiccough never causes death. It is only a symptom. It is the septic condition of the digestive tract that causes death. Free elimination will usually relieve the trouble.

Hiccough may be caused by inflammation of the upper part of the spinal cord, as that part of the cord situated in the neck sends out the nerves which pass downward through the chest cavity and supply the diaphragm, and the inflammation might so irritate and excite these nerves as to cause spasmodic action, as described.

A tumor in the lungs may cause pressure upon these nerves and result in irritation and spasm. The same nerve that supplies the lungs also supplies the stomach, and through the solar plexus communicates with the nerve supplying the diaphragm; hence the irritation from a tumor in any part of the lungs may cause spasm and hiccough.

Hiccough may result from a strangulated hernia, because the nerves which supply the digestive tract also communicate with the solar plexus and thus with the diaphragm.

Peritonitis or inflammation of the thin membrane which surrounds the digestive tract may also cause hiccough.

Glycosuria, or Diabetes Mellitus.

During digestion the starch contained in the different food products is converted into glucose or grape-sugar. This is absorbed and carried by the veins direct to the liver, where some of it is converted into a substance called glycogen, and this is stored up by the liver-cells and delivered to the circulation as the system requires. As a result of indigestion and lack of nourishment the liver may become unhealthy and unable to convert the glucose into glycogen, and then there is too much glucose or grape-sugar in the circulation.

The system cannot oxidize so much, and passing through the circulation it irritates and weakens the kidneys, until some of it finds its way into the secreting tubes and is eliminated.

Primarily this is called glycosuria, or diabetes, later it produces Bright's disease.

In health the glucose or grape-sugar is oxidized; i. e., unites with the oxygen from the air we breathe. This produces heat and aids in maintaining the bodily temperature, but the system cannot oxidize the excessive amount present in diabetes, hence its appearance through the kidneys, and later Bright's disease.

The cause of glycosuria has never been given. Medical authors have charged the disease to the liver, kidneys, pancreas, brain, "some undiscovered condition of the nervous system," etc. Undoubtedly the first cause of this disease is found in the lowering effects of dyspepsia and retained waste. This results in a lack of nourishment, the nervous system becomes weakened and irritated, and the different organs cannot properly

perform their work. The liver is unable to convert the glucose into glycogen and too much grape-sugar is permitted to circulate through the system. This acts as an irritant and increases the trouble, the liver becomes inflamed and disease follows. This corresponds to the condition of the liver, for it is inflamed and enlarged.

A diseased stomach irritates the heart and it becomes weak and fluttering. This is often called palpitation. The sympathy between the heart and stomach is close, because the same nerve supplies both organs. A diseased stomach and a weak heart cause a feeble circulation; a feeble circulation lessens the lung-power, breathing is interfered with, less oxygen is taken into the system, the red corpuscles (the oxygen-carriers) become pale and lose their vitalizing influence, less carbonic acid gas is exhaled, the lung-tissue loses its vitality and elasticity from a lack of nourishment, congestion of the lungs follows, producing an unhealthy exudate in the air tubes, followed by more or less cough and expectoration. This is bronchitis.

With a feeble circulation the skin becomes inactive and fails to eliminate. The dense network of vessels which lie just beneath the skin are congested and the circulation sluggish, the glands in the skin become filled with decomposing matter and inflammation and excessive secretion results as in eczema, dandruff, and other forms of skin disease. These conditions do not respond readily to treatment; thus proving that the cause is systemic. Boils and carbuncles are produced in the same way.

Chronic congestion with partial loss of nerve-control

may result in rapid proliferation of morbid or diseased tissue and produce cancer.

Tumor.

The bacteriologists would have us believe
That cancer is caused by germs.
They tell us that the cancer-bug feeds on human flesh,
The schizomycetes on the liver;
While the actinomycosis and the lockjaw forces
Send their victims o'er the river.

Cancers are sometimes simply termed tumors. A tumor is any overgrowth, or abnormal development. Inflammatory swellings are sometimes called tumors. Tumors are deviations, both in size and shape, from the normal tissues in which they are found. Tumors usually possess an inherent tendency of growth; their growth is independent, continuing when the rest of the body is only being maintained in its normal type, or while the tumor is growing the body may lose in weight. Those tumors which end fatally are called malignant; those which are not destructive to life being called benign.

One of the leading characteristics of a malignant tumor is a tendency to degenerate and destroy the ultimate elements of the tissue in which it occurs. Generally speaking, a tumor may be considered cancerous (malignant) when it infiltrates or invades surrounding tissue, when it invades the connecting lymphatic glands, when it is attended by stinging or darting pains, or by obstinate and slowly extending ulcerations, when occurring is a person having impaired health, and not traceable to any known cause. People who brood in secret

over the suspicion of a cancer subject the system to lowering tendencies, which render them more liable to other diseases. A cancer grows from a division of its own cells, and without any support from the cells constituting the surrounding tissue.

Tumors are subject to disease the same as healthy tissue. Aside from transmission from the blood-stream and lymphatics, malignant growths may be carried down the trachea, and through the ureters. The more purely cellular the tumor, the more malignant the growth. Neuromas, or nerve-tumors, are rare, affect only the motor nerves, and are harmless except from pressure or mechanical interference. Malignant tumors are called carcinoma, sarcoma, and epithelioma. Carcinoma has a framework of connective tissue the same as other structures and organs, and the intervening spaces are filled with epithelial cells. Epithelium is the name given to the cells which cover the surface of the body and all mucous membrane. When the connective tissue framework is thick and the spaces are filled with large cells, the cancer is hard and fibrous. Sometimes there is but a small amount of connective tissue framework, with a corresponding increase in the epithelial cells which constitute the growth, giving it a soft appearance, resembling the physical character of brain-matter, hence they are called encephaloid, meaning brain-like.

Sometimes hard carcinomas, which grow from the skin and mucous membrane, are called epitheliomas. They occur on the lip, nose, tongue, stomach, etc., so called because of their being located on the surface.

Carcinomas are formed in the lymphatic tissue. The spaces between the fibers which form the framework are merely dilated lymph spaces, and these spaces are more or less filled with epithelial cells. The blood-vessels are situated in the connective tissue framework, therefore do not communicate directly with the cells, which lie loose within the spaces, and which constitute the growth. If carcinoma should cause destruction of the connective tissue framework sufficient to reach the blood-vessels, more or less hemorrhage would result and it would then spread by the blood-stream as well as by the lymphatics. As carcinoma or cancer is always derived from epithelial cells, it may occur primarily wherever these cells are found. These cells cover the mucous membrane of the digestive tract, that lining the air-tubes of the lungs; they cover the serous membranes lining all closed cavities, as the abdominal, chest cavity, etc., all glands and their ducts. When cancer is found in other tissues it is secondary, having been carried by the circulation or lymphatics. Those forms of cancer called sarcomas, like carcinomas, are given many names. They are composed of embryonic or newly formed connective tissue cells. Connective tissue forms a framework for all the structures of the body. When resulting from inflammation, the new cells are first small and round, next they elongate into oval or spindle cells, then become hard and fibrous. In sarcoma these cells may undergo no higher change, but remain round, or they may become oval, spindle-shape or fibrous; hence there are round-cell sarcoma, oval-cell sarcoma, and spindle-cell sarcoma. When there is general fibril-

lation with loss of many cells, as in degeneration, they are called myxoma, or myeloid sarcoma, from their resemblance to bone-marrow. Sometimes the framework contains black pigment or coloring matter; these are called melano-sarcoma.

Combinations of these and other names are used. Chrondroma means a tumor springing from cartilage; osteoma, one springing from bone; myoma, springing from muscle; neuroma, nerve-tumor. Myxoma (mucous) or myxo-sarcoma, is so called when degenerative changes have produced a gelatinous substance resembling mucous.

Lipoma is one containing much fat.

Sarcomas are composed of embryonic or newly formed connective tissue cells, and may occur wherever there is connective tissue. They may arise at any age, but are most common in early life, while carcinomas seldom occur before forty years of age. In carcinoma the blood vessels are situated in the connective tissue framework, in sarcoma they open directly into the growth, and in their passage through the tumor the vessel walls are formed by sarcomatous cells; therefore the cells may easily fall into the current and be washed away by the circulation. The veins may carry some of these cells to the heart, and as the blood is sent through the lungs the malignant cells may lodge in the capillary network of vessels and produce secondary sarcoma. Emboli, or blood-clots, may now be carried back to the left side of the heart and sent through the general circulation, and may lodge in the brain, liver, kidneys, bone, etc., and produce secondary sarcoma. Sarcomas

usually grow more rapidly than carcinomas by reason of their more direct blood-supply; and when removed they are more likely to recur, because, as just explained, the malignant cells are more liable to be distributed through the system and may develop at any point.

Eating cancer, or rodent ulcer, occurs on the face and springs from a sweat-gland, sebaceous gland, or hair-follicle.

Birth-marks are sometimes called angioma, meaning blood-tumor. They are caused by dilation of the blood-vessels which lie just beneath the surface.

These different varieties differ only in the size and shape of the cells of which they are formed, and the part of the body in which they are located. Really it is a distinction without a difference, for unless successfully removed all, except birth-marks, are destructive to life.

Benign tumors, or those not destructive to life, are common connective tissue overgrowths. Usually their only danger is their mechanical interference with the surrounding structures. However, they may rotate at the point where they are attached (pedicle), and this may cause pressure and check the return circulation. The veins would become congested, rupture, and be followed by hemorrhage. Inflammation and suppuration may follow, or inflammatory adhesions might occur, the tumor becoming attached to the surrounding structures. This might cause perforation into the digestive tract, and be followed by death.

Their pressure may cause inflammation of the kidneys, constipation, spasms or paralysis by pressure upon

nerve-fibers, or may cause enlargement of the heart, and be followed by degenerative changes, etc. None of these conditions often occur, yet they should be considered of sufficient importance for the removal of benign tumors. Medical writers have never given the cause of tumors, or the causes from different investigators are but different theories, varying in probability and ingenuity.

Cancer.

A prominent medical writer said recently: "The theory of germ-causation, never generally accepted, has been almost entirely abandoned. The view most generally entertained at this time is that cancer is the result of rapid growth of the cells of the basement membrane, due to septic blood." Basement membrane is a thin layer of flattened, almost indistinguishable cells, just beneath the surface of the mucous membrane. It also forms one of the layers of the skin, and dips down into the little glands of the skin, stomach, etc.

"Cancer is most apt to occur in an organ where septic blood has produced chronic congestion or inflammation, and nerve-control has become partially lost through gradual progressive paralysis. In other words it is a degenerative change. The nutrition and function of the organ involved have escaped the control of the nerves, and the cells of the part multiply energetically and lawlessly, according to their nature. Rapid multiplication of tissue-cells always means a diminution of vitality in each individual cell.

"In health the nerve-supply imposes cell-function,

retards decay and death; but with this influence impaired or removed by paralysis, the tissue-cells know no higher law than their own inherent tendencies, and with the abundance of blood and lymph furnished by the engorged organ the diseased cells multiply and reproduce their kind with the greatest luxuriance and abandonment. The most immature and imperfect formed cells—those of the surface—are constantly dying and breaking down, furnishing the phenomena of ulceration and hemorrhage." This corresponds exactly with the condition which exists during dyspepsia; lack of elimination, lack of nourishment, and the degenerating tendencies which always follow.

Rheumatism.

Rheumatism is not a disease but a symptom—a symptom of a disease generated in the system. The term muscular rheumatism is not correct. Strictly speaking it is neuralgia and neuralgia is but nature's voice calling attention to our errors. If the reader could examine the affected muscle under the microscope, the fibers of which the muscle is formed would be found in a natural condition. There would be no inflammation or other evidence of disease; demonstrating clearly that the trouble was confined to the nerve-fibers and not in the muscle. The pain may be increased by exposure, insufficient food, improper clothing, etc. Hard work also increases the irritation, hence those muscles doing the most work are most affected, as those of the back, shoulders, wrist or other joints.

Rheumatism may be acute or chronic, may affect

muscles, joints or other structures. Rheumatism of a joint differs from muscular rheumatism. Every joint is enclosed in a thin membrane in the form of a short, wide tube. The membrane is attached at either end to the margin of the articular surfaces of the bones forming the joint. This membrane encloses the various ligaments, which support the joint. This membrane furnishes the secretions or fluids, which lubricate the joint and prevent friction. In acute rheumatism of a joint the irritation causes an increased blood-supply, and there is swelling and redness in proportion to the increase in the circulation. The more vascular the part, the greater the swelling. The swelling causes pressure and the pressure causes pain. Redness or discoloration is caused by the escape of the red blood-corpuscles into the surrounding tissue. With an increase in the blood-supply there is an increase in the tissue changes, hence an increase in the temperature because animal temperature depends upon tissue change.

This gives what are called the four cardinal symptoms, swelling, redness, heat and pain. Pain is not always present. For instance there may be little or no pain in chronic inflammation of the liver. There may be no pain in inflammation of the solitary glands, called Peyer's glands, in typhoid fever.

Chronic rheumatism of joints does not usually follow the acute, but arises insidiously in people who have suffered from exposure, improper food, overwork and other hardships. In chronic rheumatism of joints the cartilage covering the articulating or adjoining ends of bone may become eroded. The exposed bone becomes

irregularly thickened, the capsule or membrane covering the joint, and the ligaments which support it, may become fibrous and contract. The prolonged irritation has here caused a slow form of inflammation, and the same changes take place as elsewhere. There is an increase in the connective tissue framework; later this contracts, deforms the joint and limits mobility. The contracting fibers cause pressure, aiding in the destruction of cartilage, ligaments and other normal tissues. Sometimes during these degenerative changes the ligament which supports the joint softens, allowing certain muscles which are attached near the joint to contract, thus causing deformity. Sometimes the tendons and ligaments about the joint become filled with lime salts, of which bone is formed. This results in a stiff joint. Pus does not form.

The best treatment for chronic rheumatism is hot air. A temperature from three hundred to five hundred degrees may be applied. Hot air dilates the small vessels, brings the blood to the surface where it is applied, and thus relieves the congestion or inflammation beneath. It causes the blood to flow through the part. This relieves the pressure and stops the pain, adhesions and accumulations are broken down and removed, thus preventing stiff joints. There is active discharge through the skin, and this removal of waste relieves the irritated nerves. The improvement in the circulation stimulates natural activity, nutrition is increased, the heart is strengthened, a clouded brain is relieved, the torpidity is overcome.

Massage is also of benefit. Massage stimulates the circulation with the same results as hot air, though it is much more limited in its effect.

Electricity, applied by the interrupted or Faradic current, is only a means of massage. The advantage from the interrupted current comes from the fine, vibratory, massage-like effect; in other words, from the mechanical effect and not from the electricity.

The remedies to be used are laxative and antiseptic. Digestion must be improved. Hot air or drug-medication will be more effectual if administered by one skilled in their application; but what any and every one can do is to guard against all forms of excess, keep the eliminative organs active, and they will not be troubled with rheumatism. Every thinking mind will admit that rheumatism is generated from waste products which are retained within the system. Active elimination will prevent this, and prevention will relieve the necessity of treatment.

Following dyspepsia there is first congestion, and if continued this results in a low form of inflammation as described. Any part or organ offering the least resistance will be most affected, and when the inflammation reaches a certain point there will be cell-proliferation or increase of tissue, resulting from the increased blood-supply.

The new tissue is a form of connective tissue which nature designed as a framework for all the structures of the body, described on page 138. Gradually the natural tissue is replaced by the new. This new tis-

sue takes no part in the work carried on by any of the various organs, but crowds out more or less the original, and the organ or part is weakened in proportion. Healthy tissue is caught in the contracting fibers and destroyed. Many small blood vessels are obliterated. If in the stomach, the part supplied by such a vessel may die from lack of nourishment, degeneration follows.

As stated every scar is an example of this kind of tissue. The scar looks light in color in proportion to the number of blood vessels destroyed. If on the scalp the contracting fibers, besides obliterating blood vessels, will destroy some of the hair-follicles and leaves a bare spot. A scar is large or small according to whether the edges of the wound were brought smoothly together or allowed to gape, leaving a space to be filled in with what is called granulation tissue.

The amount of this newly formed tissue is in proportion to the amount of inflammation and septic or poisonous matter contained in the blood. Perhaps a burn gives the best illustration of the contraction of connective tissue resulting from inflammation, because there is more of it; in this case the tissue destroyed by the burn—dead tissue—is in contact with the healthy, and as the dead tissue is being decomposed and removed its morbid influence comes in direct contact with the living. This is the battle line between the living and the dead, hence inflammation is more intense, and there results more connective tissue overgrowth. As a result of burns many people have seen the hands or face drawn out of all resemblance to a human being.

Paralysis.

Paralysis is due to inflammation and connective tissue overgrowth, produced by septic blood. The inflammation affects the spinal cord, or the cord and brain. The changes are caused by irritation and a loss of nutrition. The irritation paralyzes more or less the nerves controlling the blood vessels supplying the cord and brain, and the vessels dilate. Too much blood is the result and there follows a low form of inflammation and connective tissue overgrowth, as described. There is a corresponding destruction of nerve-fibers and nerve-cells in the cord and brain. The contraction of the newly formed tissue squeezes the nerve structures, shutting off their circulation, causing pressure and aiding in their destruction. The nerve-fibers are found in different stages of degeneration. The semi-independent nerve-centers formed by the aggregation of the ganglionic or larger nerve-cells in the cord degenerate and disappear more or less completely. With the destruction of the natural tissue and the contraction of the connective tissue overgrowth, the spinal cord becomes hard and fibrous.

According to the newer teaching the nerve-tissue is destroyed first, and is followed by connective tissue overgrowth. It is impossible for this to be true beyond a limited extent, for the first nerve-cell that died would excite inflammation around it, and this would cause an increase in the connective tissue, and the contraction of this would destroy other nerve-structures, obliterate small arteries, and thus aid in degenerative changes.

The question is of small importance, however, for back of all is a lack of nourishment caused by indigestion. Exposure, over-exertion or injury may also be responsible for some cases of spinal disease.

Practically all forms of paralysis are the same. They consist of increased blood-supply, the result of inflammation, followed by degeneration of the nerves and nerve-cells, an overgrowth of connective tissue which contracts and hardens. Sometimes one part of the cord is affected, sometimes another.

A nerve is no more or less than a long drawn out process of a nerve-cell. Certain cells in the brain and spinal cord send out these prolongations, and thus the nervous system is formed.

The nerves of sensation arise in the back part of the cord, hence inflammation of this part is first indicated by increased sensibility, which may be in the form of pain, numbness, or tingling sensations. Later there is loss of sensation, showing that the destruction is more complete.

The nerves of motion arise in the front part of the cord, hence inflammation of this part, acting as a stimulant, is first indicated by increased muscular action. This is followed by loss of motion and shrinking of the muscles, showing destruction and degeneration of this system.

The voluntary muscles of the body and extremities are supplied with nerves from the spinal cord. Many of the nerves arising in the brain extend downward, connect with the spinal nerves and modify or control

their action; but during inflammation messages cannot be transmitted through the diseased area in the cord, and this leaves that portion and all below it without a brake, and the spinal nerves having escaped the control of the mind, set up a spasmodic action due to the inflammation.

At first the inflammation acts as a stimulant and the nerves respond by involuntary movements. The patient cannot control his actions because of the constant excitement kept up in the cord.

In the second stage of that form of paralysis known as locomotor ataxia, the feet and lower limbs escape the control of the patient and fly in all directions. Later the hands and arms may suffer in the same way. With the destruction of the nerves, all motion is lost and paralysis is complete.

Paralysis of the lower limbs alone indicates invasion of the lower part of the spinal cord, because the nerves governing them arise in the lower part. Paralysis of the hands and arms indicates invasion of the cervical portion, because the nerves governing them arise there.

Chronic progressive bulbar paralysis; i. e., paralysis of the muscles of the throat, tongue, lips, etc., is caused by connective tissue overgrowth at the base of the brain, where the nerves supplying these muscles take origin. The nerves themselves are first hardened by inflammatory processes, and later degenerate. These changes take place gradually; so do these forms of paralysis. At first a few cells are affected, the number increases until nutrition and function of the part escape nerve-control, when the change takes place more rapidly.

A blood-clot may plug an artery supplying a group of nerve-cells in the cord and cause sudden or acute paralysis.

No attempt has been made to give a detailed account of the changes which take place. The object is to call attention to the fact that indigestion from any cause may result in any and all forms of paralysis.

Sometimes inflammation of the spinal cord may follow chronic rheumatism and produce permanent muscular contraction, with great deformity of joints.

These changes in the cord are responsible for all forms of paralysis, and may be caused by the irritation produced by alcohol, tobacco, over-eating, retained waste, etc., as already mentioned. Drinking hard cider will do the same thing. Hard cider contains not only alcohol, but many acids which will produce inflammation and chronic catarrh of the stomach, and this means indigestion and disease.

Volumes are written upon paralysis and nervous diseases, volumes that would puzzle the angels and drive the devil crazy, yet the subject is not so difficult to understand. Long-continued irritation in any part of the body will sooner or later produce its evil effects by interfering with the central nervous system, the brain and spinal cord. Headache is characteristic of this irritation; so are neuralgia and rheumatism. These are nature's language forcibly expressed, telling us of the poison in the body and demanding its removal.

If we continue, we expose ourselves to all kinds of aches and pains, to morbid growths, to all forms of nervousness, to paralysis, etc.

If these statements are true they clear up the causes of many spinal and nervous diseases that have never been accounted for. Yet some people are not satisfied with a plain, simple statement of facts, but prefer to build upon theory, something of a sensational nature. But even theory has never given a cause for epilepsy.

Epilepsy.

Epilepsy seems to have been born without a father; and like Topsy it never had a mother, yet disorders of digestion, depression of spirits, loss of vigor, a feeling of languor, an unhealthy system, and a clouded brain, are common in epileptics, thus giving evidence of a lack of nourishment. This robs the blood of its natural elements. It has been stated that the higher forms of digestion are carried on in the circulation; for instance, oxidation aids bodily combustion by burning certain elements in the blood; i. e., by uniting with them and producing what are called end-products, so called because such products undergo no further change, but are eliminated.

To illustrate: As a result of the tissue-change going on in the body uric acid is produced. By oxidation this is converted into urea and eliminated by the kidneys, but with septic blood oxidation is incomplete and urea is not formed, the change stops one step short, and the uric acid remains as an irritating substance carried through the circulation. This results in inflammation and degenerative changes in all the tissues of the body. The uric acid and other irritating substances

produce a chemical change in the gray matter (cells) of the brain. First this change occurs in the blood, then in the tissues, including the brain and cord as already mentioned.

If continued, there are later direct molecular or structural changes. This accounts for insanity as well as epilepsy, for during insanity the chemistry of the brain is altered, the composition of the brain-matter is not natural. It cannot be otherwise, impure blood never did and never will produce healthy natural tissue.

One-fifth of all the blood in the body goes to nourish the brain, hence the brain receives five times as much blood as any other organ of its size; and it must follow that any habit or indulgence which impairs digestion, and gives unhealthy blood, must produce a special morbid influence upon the brain and nervous system. Hence the enormous production of nervous debility, monomania, hypochondria, insanity, idiocy, and many minor ailments such as rheumatism, neuralgia, headache, mental stupor, lack of resolution, etc. Indigestion and retained waste irritate the nervous system and produce the different mental, nervous and emotional states known as hysteria, nervousness, melancholia and other depressions and hallucinations. This is the foundation upon which epilepsy stands.

Dynamite may be struck once, or a thousand times, if the blows are light enough, but sooner or later it will explode; and the irritation produced by dyspepsia may be stored up for a time, but sooner or later it too will explode. It will accumulate in the central nervous sys-

tem, the brain and spinal cord, until they are surcharged; and now at the first opportunity it breaks forth, and its power for the time is irresistible, as in an epileptic fit.

Eye specialists claim that continued irritation, caused by constant strain of some of the muscles of the eye, has produced epilepsy in school children, and that the correction of the trouble with glasses has resulted in a permanent cure.

The correction removed the irritation.

Those who have studied the question of epilepsy believe that with attention to diet and elimination a cure may be effected, while we all know that drug-medication is useless. Operations are also useless. All forms have been tried.

If injury should drive a sliver of bone into the skull, or cause other brain-pressure, an operation might relieve and effect a cure. Epilepsy is seldom caused by injury.

During an attack of epilepsy the patient foams at the mouth because he is unable to swallow. The same is true during an attack of hydrophobia.

Many will be unwilling to believe indigestion the cause of so many ailments, as they may never have had any pain or other evidence referable to the digestive organs; yet pain and other evidences of dyspepsia are not always referred to the seat of trouble, but may be flashed over a nerve-trunk and appear at some distant point. There may be burning, itching, a creeping or crawling sensation in different parts of the body, there

may be lightning pains, neuralgia, rheumatism, headache, dizziness, spasms, hysteria, bad taste in the mouth, jaundice, coated tongue, foul breath, and many other manifestations, all the result of dyspepsia, accumulated poisons in the system, bad air, lack of exercise, etc.

Why so many indications from the same cause?

Because of our several powers to resist. A diseased stomach often causes pain in the lungs. That is because the same nerve supplies both organs. This nerve is also connected with that part of the brain which controls coughing, hence the irritation may produce cough. Many think this is evidence of consumption. This is the kind of consumption that patent-medicine fakes cure. After free elimination and the great benefit that always follows, it is no trouble to get the usual letter from the patient, who no doubt believes she has been snatched from the brink of the grave.

Cerebro-spinal meningitis, or inflammation of the membrane covering the brain and cord, may be caused by septic blood and retained waste. This condition excites inflammation in the membranes mentioned, and disease follows.

As stated, medical authors do not account for many diseases. They tell us they are due to the "preponderance of the nervous system in the bodily conformation," or "to hereditary neuropathic diathesis." We are told that "gelatinous children of albuminous parents," are especially liable to tubercular meningitis.

Take those diseases, the cause of which has never been given, and apply the following:

First, indigestion from any cause.

Second, an unhealthy condition of the digestive tract.

Third, unhealthy blood.

Fourth, a lack of nourishment which must result.

Fifth, the retained waste acting as an irritant and setting up a low form of inflammation (temperature may not be raised).

Sixth, production of morbid or diseased tissue and destruction of the natural, with corresponding loss of organic function.

Seventh, lowering of all the vital forces; the powers of resistance being more or less diminished.

Eighth, contracting and hardening of the newly formed tissue, producing degenerative changes in all the organs of the body.

The effect extends all the way from slight symptoms to more severe forms, and death.

These conditions and changes actually occur, as every pathologist can testify.

In all cases disease, any disease, is an indication that the system lacks nourishment, that lowering tendencies have been going on in the body, that waste and repair are not equal, that the nervous system has gradually lost control.

It would be unreasonable to say that disease is caused by an increase in power or strength of the individual.

If disease is due to a lack of nourishment, this has been brought about by bad air, poor food, poor digestion resulting from rapid eating, eating too much, from whisky or tobacco, from tight lacing, from lack of exer-

cise, too much hard work, or other forms of excess. The greatest cause is constipation.

Many finely written articles and much theorizing have been indulged in, regarding the causes of constipation; some claiming a lack of development in the thickness of the muscular walls of the digestive tract, imperfect nerve-supply, poor circulation; in the kind of food taken, in pathologic or diseased relations in the surrounding tissues or organs; some arguing that the malady is congenital, some that it is acquired; some claiming that it is due to too much hard work, and some to not enough, etc. And all this time constipation reigns supreme, and every day plunges the individual lower in the scale of health. Constipation means the production of many poisons which permeate the system, with lowering tendencies, deadening sensibility, stupefying every fiber. The poisons formed in the digestive tract are absorbed, producing a chronic state of disease.

The blood lacks the normal constituents and contains too much waste, the blood-corpuscles are not healthy, the circulation becomes sluggish, with a tendency to coagulation. These conditions are evidence that nature is demanding her rights. The individual has transgressed beyond the limit of safety, and now must pay the debt, principal and interest.

After disease is established skillful treatment may be needed, yet every disease and condition of ailment will be benefited by a properly selected diet, proper elimination, and the avoidance of all excesses.

Not all the skill of the medical profession has ever been able to treat the different forms of paralysis, epilepsy, consumption, etc., successfully with drug-medication alone; and sometimes diseases of lesser gravity, such as rheumatism, sciatica, neuralgia, hysteria, etc., refuse to yield to it. This proves that the disease is systemic, and that general disinfection is needed, something to check the degenerative changes, and natural food to supply and rebuild the wasting tissues.

Foods are derived from the three kingdoms, animal, mineral and vegetable. They are divided into nitrogenous, those containing the element nitrogen; and the non-nitrogenous, or carbohydrates, those not containing nitrogen.

The nitrogenous are classed under the following heads:

Fibrin, from the animal kingdom (all muscle is chiefly fibrin); glutin, from the vegetable kingdom (this is a form of albumin existing in grain); caseine, from the animal and vegetable kingdoms (this is a form of albumin found in milk); albumin, from the animal and vegetable kingdoms.

So closely do these principles agree in chemical composition and properties, that they are considered as being a modification of one substance, and are called proteids. Proteids are the most important of the animal and vegetable compounds, and none of the phenomena of life occur without their presence.

The other class of food-stuffs, the non-nitrogenous, differ more than do the proteids, yet they all have two

important properties in common, and contain two important substances in common; i. e., sugar and starch. Sugar is chiefly of vegetable origin, the animal varieties being honey and the sugar found in milk. Sugar and starch are vegetable products, and under favorable circumstances unite readily with the oxygen in the blood and produce water, carbonic acid and heat.

The three vital processes of life in both plants and animals are digestion, circulation and respiration. Both receive their nourishment from the air and soil. Chief among the substances are wheat, corn, rye, oats, barley, rice, etc. Collectively these are called cereals, and are said to contain all the elements necessary to maintain human life. There is said to be no record that takes us back or beyond the cultivation of wheat. It has been found in the lake dwellings of the ancient Swiss, and many believe it has existed since man has existed.

It is estimated that two-thirds of our food is starch. Uncooked starch is indigestible. Unripe fruit contains starch, hence the danger of eating it uncooked. The starch is converted into sugar during the process of the fruit's ripening. Some fruits contain sugar in considerable quantities, giving them a sweet taste. This is grape or starch sugar, and it is only one-half as sweet as cane or granulated sugar.

Much has been said and written concerning the food products—what we should and should not eat. But when it comes to the question of food and drink, we are continually making mistakes. As evidence, we have

but to view the thousands of dyspeptics on every hand.

Pepsin is the great remedy for dyspepsia, and every butcher shop, sausage factory, and all the great slaughter-houses throughout the country have found it profitable to go into the pepsin-manufacturing business. Never before were there such enormous quantities of pepsin manufactured, and never before was there so much dyspepsia. Gradually we learn that we cannot purchase our digestion ready made.

Statistics prove that dyspepsia is the primary cause of sickness in nearly one hundred per cent of cases. Few escape the ravages of dyspepsia at some period of their existence. When the stomach begins to give trouble, artificial digestants are resorted to, and the great army of consumers turns first from one remedy to another, each one making the rounds independent of the others. In this way the different manufacturers of the "dope" are kept busy, and sharpers are making fortunes every year. The class of people who take this patent stuff are looking for a specific, a something that will allow them to continue their indulgences and excesses, at the same time paying little or no attention to the demands of nature. But sooner or later nature claims her rights, and for every transgression the individual must pay principal and interest. It may be in the form of an acute attack, a gradual and lingering disease, some of the many deformities from rheumatism, spinal disease, or an early death.

Every one should learn that artificial digestants afford but temporary relief, that their effects are only

palliative; i. e., they quiet the symptoms without touching the cause; and that if continued these remedies will still further weaken the digestive organs. They do this by doing their work for them. It is well known that nature does not waste any of her forces, and that she does not perform any work in vain, and if artificial digestants are employed the natural digestive fluids and ferments will cease to flow. The muscles of an arm would atrophy if the arm should be carried in a sling. A joint would refuse to act if it were kept for a long time in one position. When the arm and joint cease to act nature ceases to supply them. The same is true of the digestive fluids. If they are supplied artificially, the digestive organs will go out of business—atrophy—like the muscles of the arm carried in the sling, or refuse to act, like the joint that had remained too long inactive.

The symptoms of dyspepsia are, flatulency with eructations, bad taste in the mouth, coated tongue, foul breath, sense of fullness, soreness, pain, or a feeling of weight in the stomach, a raw or burning feeling in the stomach or behind the chest bone, low spirits, evil forebodings, pressure over the stomach, drowsiness after meals, headache, palpitation of the heart, with flutterings, and at times a hesitancy in its action, nausea and perhaps vomiting, at times the appetite poor and again ferocious, after which undigested food may lie in the stomach for hours or days. This may give the stomach control over the mental faculties, and the sufferer becomes irritable, may be unable to sleep, or may be

troubled with bad dreams. Many great men and high livers have suffered from dyspepsia.

Where indigestion occurs in the digestive tract below the stomach, there is pain or soreness two or three hours after eating. If gas forms, there is a sense of fullness and bloating. If long-continued the sufferer will become emaciated from lack of nourishment.

The remedy for dyspepsia is largely in the hands of the sufferer, and can be expressed in one word—Diet.

Eructations in which there is recognized by taste or smell anything eaten or drank, is evidence that the stomach cannot care for it. It is an indication that fermentation has occurred, and the flavor or odor of food is being thrown off, with the gases of decomposition. This may result from improper food, more often from eating too much or too fast. If the eructations are greasy, avoid fats; if they are sour, avoid sugar and starchy foods, as these produce acids which cause the sour taste. If there is a bitter taste in the mouth it is bile, and indicates congestion of the bile-ducts.

The stomach does not rebel without a cause, and its warnings should be heeded. When stomachal digestion is perfect we are unconscious we have a stomach. Every organ has its individual signs by which it makes known any abnormal condition, and it is upon the recognition of such signs that diagnosis is made. Diet, fresh air, sunshine and proper exercise, will cure most cases of dyspepsia. If muscular exercise could be bottled up and administered in tea or tablespoonful doses, while people were in bed or comfortably seated in rocking chairs, it would be more generally indulged

in, and those preparing such treatment could command their millions. Ball playing, Indian-club swinging, the use of light dumb-bells, the playground with its sunshine and pure air, or gliding over the dancing waters in boats, are better than medicines, tonics, bitters, pills, powders, patents, and poor whisky. Remember, the three great physicians of nature are fresh air, pure water, and sunshine.

When the stomach is irritable through indigestion, the condition is reflected to the brain and other organs through the connecting nerve-fibers. This weaves a thread of disorder which may baffle human skill. This condition produces many imaginary ailments, the "blues," melancholy, irritability, etc. These cases do not need medicine. It is as absurd to treat such cases with medicine as it would be to give medicine for lameness caused by a sliver driven into the hand. The stomach needs a rest and freedom from all irritating substances just as much as the hand needs to have the sliver removed. Any quack can dose a dyspeptic with cathartic pills and whisky-bitters, but it takes a profound physiologist and a good cook to prepare food for a diseased stomach.

All starchy foods should be cooked for a much longer time than usual. We read that bread is the staff of life, but as stated, there is nothing said about dough.

Many cases of dyspepsia can be cured by eating slowly. It may be interesting to know that a glass of ice-water lowers the temperature of the stomach thirty degrees, and this has a powerful effect in checking digestion, and in producing shock.

Alcohol is the greatest producer of dyspepsia.

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